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### Organizing Waste Reduction in the Dutch Waste Sector

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## 9. WASTE REDUCTION AND THE STRUCTURING OF WASTE SECTORS <sup>1</sup>

### 9.1 Introduction

Examination of the structure of the Dutch waste sector in 1993 confirmed that several aspects in the organizational structure of waste management do not favor waste reduction initiatives (de Jong & Wolsink, 1997). To obtain ideas about improvements for the structure of the Dutch waste sector, some comparative case studies were conducted. The waste sector in New Jersey (USA) and Denmark were studied, as well as the Dual System for the handling of packaging waste in North Rhine-Westphalia (FRG). The Dutch waste sector was also compared with the electricity sector in the Netherlands (Slingerland & de Jong, 1998).

A total of five core elements formed a comparative basis for the case studies. The core elements that are essential for (raising barriers against the) reduction of waste streams in the Dutch situation are the following:

- separation of functions in the waste market;
- the conditions for transactions;
- the role of public authorities;
- the level of scale in the planning of waste management, and
- the actors to which the responsibility for waste reduction is attributed.

After comparing the case studies one of the elements appeared to be of secondary order. The issue of planning scale is, in practice, repeatedly an aspect of the other elements. Therefore, scale level in waste management is no longer considered a core element in the structure of the waste sector (de Jong & Wolsink, 1999).

After studying the sector structures in the Netherlands and abroad, five proposals were formulated for adaptation by the present structure of the Dutch waste sector. These proposals will be indicated in the next sections as 'the five proposals'. They were presented to experts for an ex-ante evaluation. The objective of this ex-ante evaluation, described in this chapter, was to examine advantages and drawbacks of the five proposals for changing (parts of) the structure of the Dutch waste sector. The key questions we want to address are:

- Will the five proposals result in incentives for waste reduction, i.e. will adaptation of the structure be effective?

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<sup>1</sup> Part of it was first published as a paper for the 1998 Greening of Industry Conference in Rome, Italy.

- What will be the consequences of implementing the five proposals for the quality of collection, processing and disposal that are provided by the organizations in the waste market? Does adaptation interfere with the reliability, the affordability and the attainability of services?
- What possible problems can be expected if the proposals would be accepted?

The format of the ex-ante evaluation, as well as the procedure that has been followed to gather data will be explained in section 9.2. In section 9.3 the five proposals will be presented, and in section 9.4 the results of the ex-ante evaluation will be summarized. Finally, in section 9.5, conclusions will be drawn and some final recommendations will be made.

## **9.2 Method of Analysis**

In order to formulate some alternatives for the Dutch waste sector, all findings from the multiple-case comparisons and all conclusions based on information beyond the case studies were integrated. The comparison of waste sectors abroad showed that the effect of the distinct core elements in the structure of the waste sector is dependent on the other core elements. In methodological terms: the interaction effects (combinations of factors) are more important than the main effects (single factors). Table 7.8 summarizes the main conclusions of the comparative multiple case study, which are presented in de Jong & Wolsink (1999).

The conclusions presented in chapters 7 and 8 formed the basis for formulating the five proposals for adaptation of the structure of the Dutch waste sector. Adaptation should lead to conditions that more effectively stimulate waste reduction.

The five proposals, which will be described more extensively in section 9.3, can be summarized as:

Proposal 1: 'Vertical separation of market functions';

Proposal 2: 'Horizontal separation of the waste market';

Proposal 3: 'Withdrawal of public bodies from market functions';

Proposal 4: 'Responsibility for waste reduction needs to be attributed to market actors', and

Proposal 5: 'Waste collectors should be encouraged to take an interest in achieving waste reduction'.

These five proposals were sent to 25 persons. They represent organizations that are part of the Dutch, German, New Jersey and Danish waste sectors, such as collectors, processors and disposers, and also public authorities at different administrative levels. Some of these persons were interviewed

during the case studies, but others had not yet been introduced to the research project. Finally, the proposals were sent to some Dutch authors of studies which also include proposals for altering (parts of) the structure of the Dutch waste sector.

In total, nine oral interviews with eleven persons were conducted. In two cases two persons, representing the same organization, were interviewed at the same time. In each of these two cases, the interviewees did not always have the same opinion, and are therefore counted as two separate respondents. Besides being asked about their points of view on the proposed adaptations to the structure of the waste sector and their assessment of the effect on solid waste flows, they were also questioned on their opinions about changes in the structure of the Dutch waste sector since 1993. The conclusions in sections 9.4 and 9.5 are mainly based on the interviews. Additional information was collected by asking others to give their comments either in written form or by telephone. Of all those asked, one Dutchman and three foreigners (a German, an American and a Danish person) responded.

### 9.3 The Five Proposals

#### 9.3.1 *Proposal 1 'Vertical separation of market functions'*

Solid waste has to be collected by an organization that is not involved with the market functions of processing or disposal. *Vertical separation of functions* prevents putting the waste collection function in service of reducing the risks of investments in the processing or disposal functions.

Separation only works if the market participants have no other means of countering the risks of their investments in expensive processing or disposal capacity. Therefore, *governments should preferably not be involved with any market function*. The roles of governments would then be limited to those of legislator and regulator.

If governments insist on participating in the waste market, then *the involvement of governments should never concern more than one function*. Currently, involvement can range from putting the collection service in the hands of a municipally owned company to being a shareholder or member of the board of management of some waste handling company. When the market is vertically separated and public bodies remain involved with a market function, the *regulation should be controlled by an independent body*.

### 9.3.2 *Proposal 2 'Horizontal separation of the waste market'*

*Horizontal separation of market volumes can lead to positive results when regulation ensures the introduction of interest in waste reduction. An example of a horizontally separated market is the Dual System in North Rhine-Westphalia. In this separated market for packaging waste it is shown that waste reduction can be accomplished.*

*Regulation should prevent a tendency towards monopoly, because of the risk that this monopoly might endanger the existence of the partial market, or threaten the existence of other partial markets. The Dual System shows that a dominant position in one market offers a good basis for activities in other waste markets. It is also very important to regulate the entrance of organizations from other sectors, like the energy sector, into the waste market. Such regulation would prevent a situation in which activity in the waste sector favors the activities within the energy sector. For instance, the concentration and monopoly-forming of energy companies in a separated part of the waste market must be considered as a serious threat to waste reduction when regulation does not prevent the incineration of collected waste for producing electricity that can still be re-used or recycled. Such a monopoly will tend to define all incineration as 'energy recovery'. Finally, within each partial market it is necessary to realize vertical separation of market functions.*

### 9.3.3 *Proposal 3 'Withdrawal of public bodies from market functions'*

*The withdrawal of public bodies from the waste market appears to be favorable for waste reduction under certain necessary conditions. Waste reduction as such is not served better or worse with either planning or competition. From that viewpoint, the question is whether a function should be in public or private hands. Conflicts of interest seem to occur more often within public bodies, because they not only participate in the market, but also try to direct waste streams through policy. Their withdrawal from the waste market would give governments an improved ability to regulate the waste market. Government regulation from outside the market could be more effective towards stimulating waste reduction, and market functions should, therefore, lie as much as possible in the hands of private companies. Through independent control and regulation, stimulation of waste reduction could be achieved, because the regulator would have no market interest to protect. The 'desired direction' is not toward disposal, but rather toward prevention and recycling, the real priorities of the waste management hierarchy. Meanwhile, in the interest of stimulating waste reduction, vertical separation is required, and this is also true for a privatized market. A ten-*

dency towards the creation of a *monopoly has to be avoided through regulation*.

Public authorities should understand that certain conditions for transactions in the market have a restraining effect on waste reduction. Long-term contracts that are directed at the covering-up of investment risks in disposal or processing need to be avoided, because they contain 'financial punishments' for achieved reductions. Sometimes permits issued by local governments, which also carry investment risks, play a similar role. Instead, clear and strict regulation is required. *Short-term contracts* allow flexibility for reduction initiatives. Furthermore, *payment for supplied services* is preferable to payment for possible use of services. The final condition is that *an independent regulator has to be introduced, when public bodies are involved with a market service*.

#### 9.3.4 *Proposal 4 'The responsibility for waste reduction needs to be attributed to market actors'*

In order to stimulate waste reduction, *the responsibility for waste reduction must be attributed to market actors* like producers and distributors of goods. Regulation should be used to ensure that materials and products are recycled in such a way that they retain the highest possible grade of quality. Regulation and planning of waste management remain laborious, because the official waste sector borders do not indicate a closed system. Using regulation in order to direct waste streams 'top-down' without enforcement is ineffective. Even when permits and bans are used to promote reduction, much effort would be required to enforce regulation and thus achieve the desired effects. Therefore, *regulation must be directed at conditions for the waste market*. The obligation to internalize costs for waste handling into a product price is one example of attributing waste reduction to market actors through regulation. The German ordinance for packaging waste can be seen as an example of setting the conditions for market participants, an alternative to top-down regulation.

Horizontal separation of parts of the waste market makes it easier to attribute responsibility for waste reduction to market actors. *Monopolies or cartels should be avoided* and within a (partial) market *no public bodies with regulatory power should be allowed to actively participate in the market*.

### 9.3.5 *Proposal 5 'Collectors' should be encouraged to take an interest in achieving waste reduction'*

*Waste collectors*, the organizations that have direct relations with customers, should be given an *interest in waste reduction* in order to introduce a forceful incentive to achieving source reduction and recycling. This can be realized by:

- Establishing a vertical separation of functions;
- Introducing competition at the collector level;
- Having collectors receive a fixed allowance, which is non-quantity based;
- Having consumers pay a quantity based bill for the collection service, and
- Establishing a (municipally administered) demand management fund.

If collectors' profits were not related to the quantity of waste collected, whereas their costs were (a situation which is already applied to the collection of household waste), they would theoretically receive a financial incentive to stimulate consumers to reduce the quantity of waste offered for collection. This situation implies that *collection should not be connected to disposal*. Another condition necessary for this incentive is a competitive situation.

In the present situation any collectors' costs can be reimbursed by a higher tariff charged to consumers, who have no choice but to pay it. If *collectors of household waste receive a fixed allowance per customer*, competition must concentrate on reducing costs by stimulating consumers to reduce waste production. A decrease in the amount of waste collected means a reduction of costs, at least when a vertical separation of functions has been established, and the collecting organizations have no involvement with processing or disposal. Hence, establishing vertical separation of functions forms another condition. Especially when collectors have to compete for acquiring a short term contract for the household waste collection service within an area, *competition at the collectors' level* would give an extra incentive to stimulating waste reduction by consumers and increasing service to customers.

*Consumers* would be stimulated to reduce their waste by *paying a quantity-based bill* for the *collection service*. To combine a quantity-based charge to consumers with a fixed allowance for collectors, *the establishment of an intermediate financial facility* would be needed to which consumers pay their bills and from which collectors receive their allowances. This facility could be provided by *a municipally administered fund out of which some additional waste reduction initiatives could also be financed*. A con-

dition should be a strict curtailment of municipal responsibilities for this task, leaving the remaining functions in the waste market to other organizations in order to prevent conflicts of interest.

#### 9.4 Results of Ex-Ante Evaluation

In the interviews, respondents often supported the expectation that the proposals, at least in theory, would have an effect on waste reduction. But subsequently they gave arguments to reject the possibility of applying the proposal in practice. The number of arguments for or against application does not reflect whether a proposal was evaluated as being interesting or likely to be effective. For example, the first proposal was evaluated as an adaptation that would very likely result in a positive effect on waste reduction, but at the same time the respondents only brought arguments against application into the discussion during the interview.

In the subsections beneath, the arguments against application of the proposals and the additional arguments for application will be presented. Appendix 4 contains 5 tables that list all the arguments that were given in the interviews, not just those that reflect the authors' views. First, some more general remarks must be made.

It is remarkable that most respondents prefer to avoid any changes at all, a psychosocial phenomenon known as 'resistance to change' (Coch & French, 1948; La Piere, 1965). These respondents prefer to avoid any new bureaucratic activity that is needed either at a national level (Ministry of Economic Affairs) or at a supra-national level (European Commission). Some respondents especially want to prevent the time-consuming and intensive process of negotiations required to achieve changes. Therefore, the status quo is often preferred over any structural change of the waste sector. Nevertheless, almost all interviewees expect that a change in the structure is inevitable. Some organizations are even pro-active in the sense that they recently financed research projects to investigate what strategy to adapt. See for instance studies done by VNG (1998, another is forthcoming), NVRD (KPMG, 1998) and AOO (Moret Ernst & Young, 1998).

In the interviews, one of the standard questions was whether the respondent could suggest a sixth proposal or a part of an alternative that could contribute to structural changes in favor of waste reduction. Three respondents firmly stated that their alternative is to maintain the present waste market. Another respondent emphasized that only small changes contributing to improving the conditions for achieving some degree of waste reduction are preferable for application.

Only one respondent formulated a real alternative: rearranging the responsibilities of public authorities in such a way that municipalities (and with them consumers) have to bear less financial risks. The present situation of a hybrid waste market can remain the same, but the national government -in casu the Ministry of Housing, Spatial Planning and the Environment- has to act as the investor in disposal capacity, and possibly also as the responsible party for the collection of household waste. When the national government owns and administers disposal plants, it can put a surcharge on disposal tariffs in order to support a disposal fund. In times of shortage in disposal capacity, investments for new plants could be financed from the fund. In times of overcapacity, the national government should be able to decide to close plants prematurely and allocate some part of the fund for loss of income (VNG, 1998).

Table 9.1 The assessment of the effectiveness of the proposals on waste reduction (n=15)

	Positive result	No opinion or not sure of effect	Negative result
proposal 1	6	4	5
proposal 2	8	5	2
proposal 3	6	6	3
proposal 4	13	2	-
proposal 5	3	4	8

Table 9.1 shows respondents' assessment of the effectiveness of the five proposals. The respondents disagreed the most on the assessment of the impact of proposals 1 and 3 on waste reduction. It is striking that during the interviews most respondents did not recognize the difference between the two proposals; they wanted to give their reaction to these proposals as if they were similar. After commenting on the aspect of vertical separation in proposal 1, they wanted to comment on the aspect of privatizing the market in proposal 3. Most respondents confused the two proposals and integrated them into one. These proposals do indeed contain similar elements, but the lines of reasoning on which the proposals are based are different.

The interviewees think that proposals 2 and 4 would have a positive influence on the stimulation of waste reduction. Finally, the assessment of the effect of proposal 5 is the most negative.

#### 9.4.1 *Proposal 1: 'Vertical separation'*

In summary, proposal 1 contains the following elements:

- *Vertical separation of functions*
- *Public authorities should not be involved with any market function, or involvement should never concern more than one function*
- *When public authorities are involved with a market function, regulation should be controlled by an independent body.*

The respondents agree with the analysis that the existence of incineration capacity attracts waste and does not stimulate waste reduction. Half of the respondents are convinced that when the incineration capacity will be 'sharply tuned', by which they mean that somewhat less capacity is realized than the calculated 'need' for it, that an adequate incentive for striving towards waste reduction would be made automatically. However, all respondents agree that the actual situation is far from being sharply tuned. Only one respondent declared that this situation will come to an end in the near future, when the installations that have been brought most recently into operation are able to fulfill their capacity by contracting collectors of industrial waste.

Some of the respondents agree with the formulation in proposal 1: separation of functions is an essential prerequisite for achieving waste reduction. Others think that de-linking of the processing and disposal function would be sufficient. They plea for maintaining a link between collection and processing, because they consider collectors to be the most familiar with waste streams, since they own them physically. Furthermore, collectors have knowledge of new developments in the area of collecting and processing technologies. Consequently, they can make the most accurate estimation when an increase in scale of applicable technologies may result in an economic advantage. Therefore, in the eyes of these respondents, giving collectors an interest in processing will stimulate reuse and recycling, without doing any harm to the continuity of pre-existing initiatives for source reduction.

Some other respondents defend an opposing position: they think that separation is neither necessary nor desirable. They plea for integration of functions, because they expect this to be a condition for achieving waste reduction. The arguments they use for this statement are that, on the one hand, scale benefits should lead to the financial feasibility of waste handling services when the functions are integrated. On the other hand, they believe that waste reduction would more likely be stimulated when a private organization could extend its activities and, as a consequence, would be able to spread financial risks and neutralize disappointing company results. They

argue that vertical separation would result in the withdrawal of private organizations, because the financial support of investments in processing activities depends on the possibilities to reach scale benefits and spread risks for negative company results over different stages in the waste handling chain. In this respect, vertical separation could even be harmful to pre-existing processing capacity.

Criticism is hardly directed at the conditions for applying vertical separation, but on vertical separation itself. Most objections are linked to doubts about the feasibility of the whole package of elements in proposal 1. It is argued that separation of functions will never be attainable nowadays, because the tendency in the waste market is towards further integration. Some disposal organizations are trying to attract customers by extending their services in the field of processing or collection. For instance the AVR, an organization that originally started with disposal activities, has recently begun a campaign to become known as a market organization that provides Modular Waste and Environment Services (AVR, 1998). This new service system intends to provide a 'full services pallet' to their customers. Besides operating in the field of incineration and the handling of hazardous waste, the AVR also provides processing activities, and currently they are also active in the waste market as collectors of household waste.

Some of the problems that are foreseen in case the proposal is applied concern the affordability and reliability of services. As is formulated in the proposal, the condition that an independent body regulates the market is found to be of great importance. Waste reduction is not a question of who is doing what. Setting the legal framework and regulating the waste market should have the most far-reaching consequences.

In conclusion, it can be said that although all respondents agree with the base statement in this proposal (that disconnecting market functions could favor waste reduction); only a few expect positive results from the whole package of elements in the proposal. There is unanimity amongst the respondents in rejecting the possibility of applying this proposal in practice. This rejection is based on doubts about the necessity to separate all market functions and about the feasibility of applying vertical separation. Some arguments show a belief that integration would result in waste reduction too. Generally, proposal 1 is not supported. Only half of the respondents support the analysis, and none of them support the feasibility of the package as a whole.

#### 9.4.2 *Proposal 2: 'Horizontally separated market'*

A summary of the elements in proposal 2 are:

- *Horizontal separation of the waste market*
- *Introduction of regulation that ensures an interest in waste reduction*
- *Prevention of a monopoly through regulation*
- *Vertical separation of market functions*

Although six of the respondents expect a positive result from raising partial markets for waste reduction, only one supports the idea of applying the proposal in practice. Two additional arguments for application must be mentioned. First, that the concept of partial markets more or less already exists in practice and second, that the tuning of supply and demand may have the result that new processing techniques will be developed and old ones will be improved.

The arguments for application do not countervail the arguments against application. Most respondents expect that organizing partial waste markets would be very expensive. According to some respondents, the example of the Dual System has shown that the financial expenses for initiating the system in Germany have been far too high in comparison with the environmental benefits that could be achieved.

Another expected problem concerns the reliability of services. Creation of partial markets could result in an overlap between several market volumes, which would probably complicate the market, and hinder outsiders from getting an overview of participants, and the physical and financial relations between them. It is difficult to control monopolies, especially in a divided, complex market.

Some respondents argue that to some extent partial markets already exist for products like automobiles, batteries and refrigerators. For these products, special take-back procedures have been established as a result of negotiations between specific branches and the national government. Although these arrangements seem to function reasonably well, most respondents do not find application of the proposal desirable. Dividing the waste market into many small parts would increase the complexity. Besides, horizontal separation may be realized, but simultaneously fulfilling the condition of vertical separation would never be feasible.

In summary, the assessment on proposal 2 is largely negative, mainly because of problems with its feasibility.

### 9.4.3 *Proposal 3: 'Withdrawal of public authorities from market functions'*

Proposal 3 contains the following elements:

- *Withdrawal of public authorities from waste functions*
- *Vertical separation of market functions*
- *Avoidance of a monopoly through regulation*
- *Introduction of conditions for transactions in the waste market that stimulate waste reduction*
- *Introduction of an independent regulator if public authorities continue to fulfill market functions*

This proposal is the most disputed one. The questions and ideas that are raised reflect the current debate between participants in the waste sector. Five of the respondents expect positive results and three of them expect negative effects on waste reduction.

The first element of the proposal is the necessity of limiting the range of tasks that public authorities have within the waste sector. This subject meets a lot of resistance. The local governments have carried the most risks, having always had to protect captive customers by collecting their waste and by investing in waste incineration plants. According to the representative of the local authorities who said this, they want to free themselves from connections with disposal organizations and processors such as composting facilities. They would like to gain a more equal position with private organizations within the waste market. However, municipalities do not want to have the waste market privatized: they want the national government to become a major player in the waste market by taking over the role as investor in disposal capacity or by taking the responsibility for having household waste collected. (VNG, 1998)

Others do not think that the withdrawal of public authorities could lead to a more stimulating environment for waste reduction. They emphasize that in particular the reliability and the attainability of waste management services will be threatened, and furthermore that the affordability is not guaranteed. They doubt that the government would be able to regulate the waste market more strictly if public authorities no longer participated in the market. They state that withdrawal would imply loss of information on the amount and content of waste streams and loss of insight in the waste field.

Practice has taught that waste supply is difficult to forecast: the market is complex and several factors are responsible for fluctuations in supply. If the national government is not responsible for the planning of capacity, who will then be responsible? Leaving decisions for investments to the private waste handling companies would result in investments in large plants in

order to create scale advantages, they argue. Competition between incineration plants may lead to tariffs that are too low. When too much competition leads to the liquidation of incineration plants, how can the environmentally sound plants be protected from bankruptcy? Another serious threat is the possibility, in the case of a European market, that combustible waste would be imported (for instance from Germany). Then other, less environmentally sound, ad-hoc solutions would have to be found for the disposal of Dutch waste. All these questions contain further arguments against the proposal. The main element in the proposal is the assumption that when the market functions are fulfilled by private initiatives, public authorities can concentrate on the task of regulating the waste market instead of strictly planning capacity and creating rules and prescriptions.

Finally, some respondents refer to an important argument that can be used against the proposal: privatization would stimulate the introduction of energy companies into the waste market. We agree that this would become a real danger, and for that reason the market has to be separated vertically. In this way the entire 'column' cannot be dominated by only one participant (e.g. energy company), as we suggest in the proposal.

Here we can see that the assessments of this proposal contain a high ideological bias, which is probably the reason why it is the most disputed proposal. The crucial point in the proposal is not the idea of privatization, but the avoidance of conflicts of interest within public authorities. This must be achieved by their withdrawal from market functions combined with a concentration on improved regulation. The regulator should not be hampered by its own interests anymore. The reactions of some respondents, however, show a strong belief in the abilities of the government and public bodies to participate in the waste market, which is a mere policy belief that is incompatible with the proposal.

The respondents that are in favor of applying proposal 3 are opposed to the argument that if governmental bodies do not participate in the waste market it is not possible to guarantee the attainability, affordability, and continuity of waste handling services. This argument is often used to end the discussion: it is impossible to determine who is wrong or right. The respondents that expect positive results from privatization of the waste market think that the national government would be particularly able to regulate the market when they are not tempted to serve the interests of public bodies involved in the market. They believe that the introduction of more competition within waste handling companies would lead to more efficient services and regulation.

An argument that is often heard favoring the presence of public authorities in the waste market is preservation of employability. The existence of

hidden employment, a more important motive, is never explicitly expressed in debates. The existence of 'banenpoolers' and 'Melkert-banen', low paid jobs in public services for gaining experience and work while retaining unemployment benefits, explains the real necessity for local governmental bodies to remain active in the waste market.

Another aspect of proposal 3 is the condition that regulation of the waste market by either a governmental body or a regulator is required. Some fear that the national government would not be able to regulate the participants. When public authorities are no longer part of the market, it is more difficult to get access to inside information, and therefore more difficult to direct waste streams. Furthermore, policy aims are best attempted when municipalities are part of the market and policy can be aimed at them. These respondents define regulation as prescribing what is (not) allowed to do with waste streams, instead of creating conditions within which market actors are free to act. Creating conditions does not only imply the steering of waste streams, but does mean regulation of the waste market in a different way.

All respondents agree that, in spite of difficulties, a monopoly has to be avoided. However, some respondents express no confidence that monopolizing tendencies can be stopped by a market regulator, such as the Dutch Competition Authority (Nederlandse Mededingings Autoriteit). They support the hybrid market, in which public and private organizations are active, although it remains unclear how monopolies are avoided that way.

The idea that the presence of public participants will prevent monopolizing tendencies, and thereby higher prices, is challenged with the argument that the development of a monopoly would be determined by transparency of the flow of money and materials. Besides, the tariffs can be maintained by regulation.

Proposal 3 evoked the strongest opposing opinions of the five proposals. It appeared to make the strongest ideological statement about the significance of the involvement of public authorities in the market, and the benefits of having only private actors in the market. However, in the proposal it is not allowed to try to pick cherries, as a few opt only for a privatized market without accepting the necessary condition of re-regulation of the new market.

#### 9.4.4 *Proposal 4: 'Responsibility for waste reduction attributed to market actors'*

In summary, proposal 4 contains the following elements:

- *Attribution of the responsibility for waste reduction to market actors*
- *Regulation directed at conditions for the waste market*

- *Avoidance of monopolies or cartels through regulation*
- *Introduction of a regulator when public authorities still fulfill market functions*

It is noteworthy that only one of the respondents is uncertain whether this proposal would create conditions for achieving waste reduction. There is agreement among respondents that regulation has to be directed at market conditions. Internalization of costs into product prices will give the right incentive for source reduction. It is remarkable that without being asked, some representatives of waste market actors suggested charging a levy on natural resources in order to discourage the use of primary materials in favor of the use of secondary ones. It appears that they want such a levy to be regulated.

Producer responsibility in Germany has shown that attributing responsibility for waste reduction to market actors creates conditions that stimulate waste reduction. Also, the packaging covenant and the obligation to take back consumer electronics, such as audio systems or refrigerators, in the Netherlands can be seen as promising concepts. In both cases, producers of goods are forced to think in terms of life cycles and material streams. They can no longer ignore the end of the life cycle of their products and trust on the well functioning of waste handling systems. However, some serious problems also need to be emphasized, such as the possibility of cartel forming, the complicated conditions for trade, and the problem of 'free riders'.

Some only favor internalization of waste handling costs in the product price when goal attainment is guaranteed. They refer to experiences in Germany as having major problems. There must be sufficient processing opportunities, fixation on the caloric contents of a product must be avoided, and recycling and reuse must become more prevalent.

For proposal 4 the assessment of its feasibility is generally positive as well, and is supported by almost all respondents. Results in terms of waste reduction are expected, as well as a fair chance that it actually could be implemented in practice. Most respondents explicitly state that no dramatic changes in the already existing waste market would be needed. Some respondents, however, suggest harmonization of the system to allocate responsibility on an European level. The reason is illustrated by the following. A Dutch consumer that buys a refrigerator pays a fee, which also includes a tax for future waste handling. A German consumer that wants to give his/her old refrigerator to a waste collector has to pay a certain amount for disposal. Therefore, a consumer would benefit most by buying a refrigerator in Germany and disposing of it in the Netherlands.

During the interviews little emphasis was paid to the fact that this proposal contains some elements that the respondents are opposing against while

giving their estimation of the effect of the former three proposals. We assume that although respondents did not have many remarks on the need to re-regulate the market and to avoid monopolies or cartels, they would have made them if during the interviews the order of proposals had been changed.

#### 9.4.5 *Proposal 5: 'Establish an interest in waste collectors to achieve waste reduction'*

Proposal 5 contains the following elements:

Establishment of waste collectors' interest in achieving waste reduction by:

- *Establishing vertical separation of functions;*
- *Introducing competition at the collector level*
- *Having collectors receive a fixed allowance, which is non-quantity based;*
- *Having consumers pay a quantity based bill for the collection service, and*
- *Establishing a (municipally-administered) demand management fund.*

The respondents find this proposal the most difficult to assess, because the proposal is too theoretical. The respondents can be divided into two groups: those that find the idea of fixed allowances and quantity-based bills attractive, and those that do not find it attractive. It is extraordinary that those who find the proposal attractive think collectors should be given a key position in the attempts to achieve waste reduction. At present, collectors do not sufficiently stimulate their customers to produce less waste, even though separated collection is often beneficial to the collector himself. In the view of the others, however, collectors would either be unreliable or they would not be able to instruct their customers effectively on how to achieve waste reduction.

Half of the respondents object to raising a surcharge on collection tariffs in order to fill the demand management fund. In their opinion, the rate of the charged tariff should be closely related to the incurred costs. The respondents found it inconvenient to have a fund filled with a surplus of surcharges. Some refer to the functioning of a deposit-refund system for automobiles. Dutch consumers pay a waste handling deposit when they buy a new car. The relationship between the rate and destination of surcharges should have been chosen on arbitrary grounds. These respondents believe that it is wrong in principle that the purposes for which the spare money is used are unclear.

Other respondents express uncertainty, because the proposal is far flung from the existing situation. This makes it difficult for respondents to estimate what the impact of the proposal would be on the reliability, attain-

ability and affordability of waste handling services. Proposal 5 is unpopular, because of the doubt both of its feasibility and that waste reduction might be achieved.

### 9.5 Conclusions of the Ex-ante Evaluation

When a respondent evaluates a certain proposal as being positive for stimulating waste reduction, it does not necessarily mean that he or she would also like the specific proposal to be applied in practice. Table 9.3 shows the answers given by respondents when asked to indicate their priorities for applying the five proposals. They were asked to decide which proposal they would prefer most to apply in practice, and in what order the others would follow. Most of the respondents could only state which proposal they would prefer to be brought into practice and/or which they would not.

It is striking that none of the respondents gives priority for the application of proposal 1, a proposal that is evaluated positively by half of the respondents (see Table 9.1). Proposal 4 is most frequently given a high priority for application in practice, which is also in accordance with expectations of the likely impact of the proposal on waste reduction. The ideas about the application of proposal 3, privatizing the waste market, are the most variable.

*Table 9.2* Prioritization in application of the five proposals, given by the representatives of nine Dutch waste sector organizations (only interviewed respondents, n=11)

	<i>High priority</i> (1)	<i>Neutral</i> (2,3,4)	<i>Low priority</i> (5)	<i>Not an option</i>
Proposal 1	0	1	2	6
Proposal 2	1	3	0	5
Proposal 3	3	0	3	3
Proposal 4	4	3	1	1
Proposal 5	2	1	4	2

The establishment of vertical separation is an element in four of the five proposals, but this factor most explicitly forms the basis of proposal 1. The most important constraint to putting the proposal into practice is the actual tendency within the waste market toward vertical integration. Integration of functions is a tendency which brings a major economic advantage, namely the possibility to spread corporate investment risks and to achieve financial

scale advantages. Reversing the integrating tendency would be a tough job, and furthermore it would have consequences for the affordability of services. However, the problem of vertical integration as an impediment to waste reduction has not yet been solved. A significant amendment to the current situation is proposed by some respondents. They argue that essentially the issue is not separation of all functions, but rather only the separation of waste collection and disposal. Collection and processing may be integrated with benefits for reduction. Therefore, we remain consistent and would recommend vertical separation, at least in as much as the disconnection of collection and disposal. Although the original proposal does not find any supporters among the respondents, most interviewees do agree with the benefits that would be gained by the unlinking of collection and disposal activities. We also recommend vertical separation.

Organizing partial markets, in order to attain better management of the supply of materials and products, and the possibilities of processing, is found to be a positive stimulus for waste reduction. It could also be concluded that disadvantages for the attainability, affordability and reliability of services could hardly be expected in this situation. Some practical problems can be expected that should not be neglected: creating partial markets would probably make the market more complex, which might have a large impact on the reliability of the waste handling services.

Proposals 1 and 3, in which privatization of the waste market is a key element, definitely provoke the most discussion among respondents. The exact effect of the proposal in terms of affordability, reliability and attainability remains unclear, because of the strong ideological assessment and opposing views. The assessment of the effects of the withdrawal of public bodies from the market is mainly determined by beliefs. Furthermore, in both proposals privatization is only part of the package. Our previous research has indicated that the positive incentives of a private market would only exist when other key elements are also implemented (de Jong & Wolsink, 1999).

Privatization and regulation are two phenomena which are linked. Saunders and Harris (1990) show that four different types of privatization exist, although two refer to types in which the new responsibilities are shifted not to producers, but to consumers. These two types (which involve an increased responsibility on the part of the producer) are: a change in ownership of utilities and a change of control. In practice, privatization is limited to 'denationalization': change in ownership, often of formerly public utilities. The second type, a change of control, means that public companies that used to have full control, because they maintained a monopoly, have to compete on the market with private companies. This is better described as

'liberalization'. In practice, as we see in the argumentation of the respondents, these types are seldom well defined, which causes many conflicts of interest. In the waste sector, both types of privatization are relevant, because ownership as well as control are involved. In markets where ownership and control are both involved, the new situation has to be re-regulated. Studies of the energy sector also show that, although political rhetoric often links deregulation to privatization processes, in practice re-regulation is needed (Slingerland, 1998; Klintman, 1998).

There are strong supporters of privatization, as well as persons that plea as strongly for the opposite. Those that are against privatization want to protect the interests of the captive consumers and society in general. The others find it possible to provide these tasks by strong regulation enforced by an independent national government.

Proposal 4, the proposal in which the responsibility for waste reduction is attributed to market actors, is clearly the most popular option, although there are still some concerns. The proposal was evaluated as one that will stimulate source reduction and provide a way to ensure the creation of closed loop systems. No insurmountable problems with regard to the affordability, reliability and attainability are expected and therefore application is strongly recommended. However, too much effort is needed to implement the proposal, and dramatic changes in the existing structure would have to be made. It also remains important to avoid some concrete problems, such as the following (as suggested by respondents): the necessity of avoiding cartel-forming or monopolizing tendencies, of establishing funds to provide financial means, and of dealing with international waste trade. Again, regulating the market is a key issue here. It must be emphasized that the proposal includes effective regulation to prevent monopolization trends.

Privatization may be inevitable in order to achieve both the responsibility of market actors and the withdrawal of regulation for only setting conditions. If public actors remain active in the waste markets, the consequence would be the introduction of an independent regulator. This last consequence did not appear to be a popular option for some actors in the waste sector. However, the proposal of attributing the responsibility for achieving waste reduction to producers and distributors got the strongest support of all the proposals.

Proposal 5 is unpopular, because its feasibility and estimated contribution to waste reduction is doubted.

## 9.6 Reflections on the Results of the Research Project

In this research project we tentatively tried to establish the impact of core elements in the structure of the Dutch waste sector on waste reduction. Are these elements determining whether waste reduction initiatives can be successful or not? The basic assumption of the research was that the way the sector has been structured affects the effectiveness of waste reduction. Considering the case studies as well as the ex-ante evaluation, we may conclude that such a relationship between these elements and waste reduction really exists. The four core elements that proved to be essential for reducing waste streams are the following: functional separation or integration, conditions for transactions, the role of public authorities, and the responsibility for establishing waste reduction. Considering the results of the multiple-case studies, we had to conclude that it is especially the combinations of these core elements that determine the waste reduction potential of the waste sector structure.

At the start of this research project the respondents, who were representatives of all kinds of actors within the waste sector, did not share our problem definition. This was the idea that internal and external purposes of organizations do not always converge. The relations and transactions between organizations within the waste sector are sources of power that are mostly not used to serve common goals. The reason that not all respondents shared our problem definition was that the relations between actors were not always explicit to everybody. Nor was it in the interest of these actors to develop ideas about the effect of the structure of the waste sector on waste reduction.

At the end of the project the perception of the problem had changed completely, because of an increased awareness among researchers and policymakers of the importance of the way that organizations within the market are related to each other. For example, the Dutch parliament paid attention to the subject of the mutual relations between structure and demand reduction, which was initiated by two study groups. First, in 1996 the CTOA studied the best possible way of organizing waste handling in the future (CTOA, 1996). The second initiative was in 1997, when the WMO, an Advisory Body for the Ministry of Economic Affairs on public activities and market regulation, was asked to focus on the effects of liberalizing sectors (WMO, 1997).

It is remarkable that most respondents within the Netherlands, as well as from abroad, agree with at least part of our analysis of the impediments for waste reduction in the structure of waste sectors. Most respondents concurred that the directions of looking for solutions were convenient and

relevant. The significance of the four distinguished structural elements is hardly questioned. However, when the respondents are confronted with five proposals, which each consists of a package of measures based on these elements, the consensus vanishes. Often respondents reacted to the propositions with an attitude of 'resistance to change', and they brought up additional arguments against the proposals. An often stated argument is that the proposal is contrary to a certain tendency. For example, a common element of four of the five proposals is the establishment of vertical separation of market functions. This may not be in line with the trend toward integration of market functions, but it seems to be crucial for achieving good conditions for waste reduction. This might be a good reason to reconsider the observed tendency.

Another argument used for rejecting proposals is that they need to be worked out in more detail. We agree that the proposals are not formulated concisely, and before applying a proposal into practice further research is necessary. However, in this research project the primary aim was not to come up with fully applicable models, but rather with directions for improvement.

Respondents tended to interpret the proposals in such a way that they left out the aspects that they did not like. So they often tended to choose one or two elements from a proposal while rejecting another one. However, the essence of all proposals is the package deal of several conditions simultaneously. The main point that we learned from the case studies is that the effectiveness of changing single aspects of the waste sector structure on the core elements alone will be poor or may even be counterproductive. The beneficial effects for waste reduction must especially be expected from the entire package of measures in one proposal. Leaving out certain conditions would make the proposal ineffective or it might even cause results that are counterproductive.

Both proposals 1 and 3 contain the element of privatization of the waste market. It is likely that the respondents, when commenting on these proposals, do not only have the restructuring of the Dutch waste sector in mind. Probably they implicitly refer to a much broader debate on reorganization and liberalization of infrastructure networks in many countries. It appears that the reactions to these proposals have been determined by policy beliefs. Those that expect benefits from privatization of the waste market are prepared to adopt the proposals, while those that do not favor liberalization trends oppose privatization. As was emphasized before, the case studies showed that the strength of the proposals for adaptation lies in the combinations of structural elements and cannot be attributed to any single element alone.

The results of our ex-ante evaluation cannot be considered a strong testimony of our former research findings. However, the added value of doing an evaluation is that we now know that those in the field of waste handling are the most committed to the application of proposal 4, in which responsibility for waste reduction is attributed to the market actors. Maybe part of the reason can be found in the fact that this proposal is described very concisely. The reason could also be that the underlying idea of producer's responsibility is a policy goal that is adopted worldwide as a principle that receives consensus among diverse parts of societies. At least we now know that people are willing to accept the consequences of such a proposal, because they believe it could result in waste reduction.

In four of the five proposals establishing vertical separation is part of the package of measurements. We agree that essentially the issue is not the separation of all functions, but rather the disconnection of the waste collection and disposal function. Although adaptation of the waste structure conform this principle will meet a lot of resistance among different participants in the waste market, we still think that disconnecting collection and disposal functions is crucial. As was confirmed by the respondents in the case study phase of the project, the vested interests in disposal of organizations that are also involved in waste collection is the core of the problem. Breaking this link between interests remains essential for creating positive conditions for waste reduction.

During the ex-ante evaluation the respondents emphasized that the issue of this thesis is still very relevant, and they inspired us during this final stage of the research project. We hope this study can fuel the discussion on how the Dutch waste sector can best be structured.