PRIMA: a Dutch initiative for environmental improvement of retail assortments

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This paper summarizes the results and experiences of the first phase of the Dutch PRIMA project (project for the introduction of ecologically sound assortments in the retail trade). PRIMA is a research and demonstration project aiming at Environmental Improvement of Retail Assortments (EIRA). Explanatory practical experiments in cooperation with three multiple-store retail companies are the core of PRIMA. These companies are: Gamma (construction materials), Peek & Cloppenburg (clothes), and Vroom & Dreesmann (stationery department of a department store). These practical experiments have been used for the development of a generalized working methodology for retail companies. Furthermore, an initial assessment has been made of the opportunities and constraints for mediation by retailers between demand and supply of environmentally improved products.

Keywords: retail trade; environmental improvement; The Netherlands

Background

Growing environmental concerns, as well as increasing environmental costs, make it necessary to investigate the opportunities for 'cleaner production' and 'cleaner consumption'. The retailer holds an intermediate stand between cleaner production efforts (by his suppliers) and cleaner consumption efforts (by his customers), which opens opportunities for mediation between demand and supply of environmentally improved consumer products by the retailer. We assume that Environmental Improvement of Retail Assortments (EIRA) starts once the retailer regards the environmental burden caused by a product as a regular product attribute in his mediation function, like conventional product attributes such as price, product appearance, product quality and user friendliness. EIRA can be seen as the answer of retailers to environment-driven developments in product supply, consumer demand and government policies (see Figure 1).

With the exception of a few companies, the idea of EIRA has been only scarcely worked out in a concrete way by Dutch retailers. The fundamental question of how EIRA can be practised and what reductions are feasible can therefore not be answered yet. In the autumn of 1992, this incited the Dutch Ministry of the Environment to launch a large-scale investigation into the role retailers - especially multiple-store retailers - can play in fostering the development and use of more ecologically sound products.

Environmental Improvement of Retail Assortments

Environmental Improvement of Retail Assortments (EIRA) is the application of a preventive environmental strategy in the retail trade in order to assure a conscious handling of the 'environmental quality' of consumer products during collection and marketing of product assortments. EIRA mediates between developments in the demand and supply of products.
PRIMA: a Dutch initiative: C.W.M. van Berkel

with a higher environmental quality (or lower environmental burden). Consequently, EIRA by retailers encourages manufacturers to develop environmentally improved products and encourages consumers to use these. EIRA applies a life-cycle approach and therefore it aims at the minimization of the environmental burden caused by consumer products as well as minimization of the environmental burden caused by the processes, (packaging) materials and (consumption) systems necessary for the production, distribution and use of these consumer products.

Given the numerous successful examples of eco-design by manufacturers, one might expect that EIRA would directly result in eco-design efforts by manufacturers. There are, however, numerous other opportunities for EIRA by retailers. EIRA proves to be the more or less parallel development of three strategies in a retail company: environmental purchasing (focusing on suppliers); environmental marketing (focusing on customers/consumers); and environmental management (focusing on the internal business organization). These three strategies mutually influence each other (see Figure 2).

Environmental purchasing

Environmental purchasing aims at the identification of environmentally improved products and their inclusion in the retail assortment. According to the way the retailer cooperates with his suppliers, a distinction can be made between purchasing existing, environmentally improved products from present suppliers ('product selection'), purchasing existing, environmentally improved products from new suppliers ('supplier change') and development of new, environmentally improved products in cooperation with present or new suppliers ('environmental product development').

Purchasing starts with knowledge about consumer preferences with regard to environmental as well as other product characteristics, and results in negotiating orders for products with suppliers. For environmental purchasing, two activities have to be included in this purchasing process. These are: environmental analysis of products and identification of improvement options (for the product assortment).

The assessment of the environmental burden caused by products should include the environmental aspects of production, use and disposal of the products ('cradle to grave' approach or life cycle assessment). For the purpose of environmental purchasing by retailers, three tools can be used.

1. Rules of thumb. These can be used for the identification of environmentally improved products within a certain product group. The purchasing departments can use these rules of thumb while selecting products for inclusion in the retail assortment. The rules of thumb can be derived from environmental product studies (such as product life cycle assessments), environmental shopping guides and eco-label certification schemes.

2. Qualitative environmental assessment (for product comparison). A number of product characteristics is used to compile a qualitative picture of the environmental burden caused by the product. Important characteristics are: material composition, packaging modes and transportation distances. Based upon this qualitative assessment scheme, products can be selected for environmental purchasing and environmental marketing. A draft for such an assessment scheme has been elaborated into worksheets.

3. Quantitative environmental assessment (for product evaluation). This method employs quantitative data about the material composition and the production and distribution processes of the product in order to compile a more detailed picture of the environmental burden caused by the product. This tool is especially suited as the starting point for environmental product development.

For the identification of options to improve the retail assortment, it is important to search for existing, environmentally improved products and to encourage suppliers and manufacturers to implement additional environmental innovations (improvements of products and/or production processes). For the latter, it is important to forge a good collaboration with manufacturers. In order to facilitate the negotiations with suppliers one could compile lists of requirements, which either focus on implementation of environment-driven innovations in the respective industry sector ('chain improvements') or on the development of an entirely new product ('product development').

Environmental marketing

Environmental marketing fosters the sales of environmentally improved products through various promotional approaches. Environmental marketing may focus on the promotion of separate, environmentally...

Figure 2 EIRA as the parallel development of environmental purchasing, marketing and management
improved products ('product promotion'), on the promotion of coherent packages of environmentally improved products ('eco-collection') or on the promotion of an assortment exclusively composed of environmentally improved products ('eco-assortment'). An important first step for environmental marketing is to disseminate reliable information on the environmental as well as the traditional characteristics of the products. However, it is not likely that proper information by itself can significantly change consumer preferences.

For environmental marketing, a distinction can be made in three main activities. These are: analysing shopping behaviour (of customers); promotion of environmentally improved products; and creating eco-friendly shop surroundings.

For analysing the shopping behaviour of customers, various opportunities exist. Market research is an important tool for identifying how and why the consumer selects his or her products out of the assortment offered by the retailer. Besides evaluation of shopping behaviour, market research may focus at priority setting for EIRA. The sales personnel as well as the customer service department are other valuable information sources as these are in daily contact with customers (consumers).

The demand from consumers for products with a higher environmental quality should be the starting point for the promotion of environmentally improved products. Attention to the environmental aspects of products has consequences for all traditional marketing tools (product, place, promotion and price). The environmental aspects of products can be communicated through various modes, such as eco-labels, informative (environmental) tags, environmental leaflets and/or environmental product files.

Creating eco-friendly shop surroundings is important in order to encourage customers to take the environmental aspects of the products into account while shopping. Furthermore, it contributes to achieving agreement between the environmental marketing statements and the actual behaviour of the retailer. The three points of action for creating an eco-friendly shop surrounding are: shop design (positioning of the environmentally improved products in the shop and design of counters, displays etc.); shop personnel (dissemination of environmental information and instructions for environmentally sound use of the products to the customers); and product packaging.

Environmental management

Environmental management supports EIRA in the retail company. It aims at enhancing environmental awareness within the retail company as well as establishing and communicating an environmental public image. Important activities are: creating a company environmental strategy ('company profile'); obtaining workers' commitment and participation ('workers' participation'); and minimization of the environmental burden caused by the 'own' business activities ('environmental care').

The environmental company profile is an important success factor for EIRA. It is the result of communication with customers, governments, suppliers and social organizations (such as environmental action groups, etc.). Part of this communication is planned, such as annual reports, environmental leaflets, environmental product tags and publication of audit results. While preparing these communication efforts, one should remember to illustrate the personal advantages for the customers, to achieve consistency between the environmental message and the own business activities, and to create acceptance for the message. A large part of the environmental communication is, however, not explicitly planned as such. Factors such as excessive packaging, displays and shop interior made from hazardous or scarce materials, and ignorance of the sales personnel might easily adversely affect the impact of the planned environmental communication.

Participation and cooperation from all levels within the retail company is a necessary condition for successful EIRA activities. Environmental awareness should become part of the corporate culture like cost awareness. Proper, two-way communication between management and shop floor facilitates the establishment of such a corporate environmental attitude. Top-down communication, in order to inform and educate employees at all levels within the organization, should go alongside bottom-up communication about possible environmental improvements at the shop floor level.

While assessing environmental claims from retailers about their products, customers will definitely take a careful look at the environmental burden caused by the business activities of the retailers. The credible promoter of EIRA should therefore be serious in his efforts to minimize waste and waste water generation and to conserve energy, materials and water. A company environmental care (or management) system creates the framework for such activities.

Conceptual framework

As discussed above, EIRA should be regarded as the parallel development of three strategies. These span the conceptual framework for EIRA (see Figure 3). While retailers face different opportunities for influencing suppliers and consumers, each retailer will have to develop and implement its own EIRA action plan based upon a proper selection of elements from this conceptual framework.

This conceptual framework for EIRA seems to fit better into the regular activities of the retailer than a one-dimension approach, in which retailers force manufacturers to improve the environmental performance of their products. Despite this, one might still expect practical problems when implementing (parts of the) conceptual framework in practice, due to, for instance, the large number of products in, and suppliers of, the retail assortment, the short decision cycles in product sourcing, the long delivery times (due to
intercontinental supply of consumer products), and long-term agreements with suppliers.

Company achievements

As part of PRIMA, company experiments have been initiated in three multiple-store retail companies: Gamma (construction materials), Peek & Cloppenburg (clothes), and Vroom & Dreesmann (stationery department). Different EIRA activities have taken place in each of these company demonstration projects, since each of them differs with regard to market, target consumer groups and company environmental policy. In order to illustrate some of the results, we take a detailed look into the achievements made at Peek & Cloppenburg.

'Peek & Cloppenburg Nederland' (P&C) has 51 stores in The Netherlands. Approximately 70% of the clothes sold by P&C have been produced outside Europe (mainly southeast Asia). Normally, the contacts between P&C and the suppliers in this region are kept up through agents. Consequently P&C has very little knowledge of the production processes used and the producers involved in the earlier stages of the product life-cycle (such as production and processing of the fibres and the production of ready-to-wear garments): many different producers are involved in the handling and processing of semi-manufactured articles. Within Europe, P&C normally has direct contacts with the clothing industry, and contacts between P&C and, for example, suppliers of cloth and dye houses are kept up through these ready-to-wear tailors. So the European textile supply chain has a little more transparency than the supply chain from outside Europe, but nevertheless it too is rather complicated.

Figure 4 serves as an illustration of the complexity of the supply chain for clothes.

In order to adjust the EIRA to the market, target consumer groups and company environmental policy of P&C, three activities have been undertaken during the first phase of PRIMA; evaluation of consumer preferences through a qualitative survey; definition of requirements for purchasing environmentally improved cotton clothes; and identification of suppliers of environmentally improved clothes.

A qualitative survey among consumers took place. The consumers do not recognize the relationship between clothes and the environment. The consumers held a positive attitude towards EIRA. However, this should go alongside a more environmentally sound display of clothes in the stores. The results of the qualitative survey are summarized in Box 1. These results are currently used in the elaboration of an environmental marketing strategy. A private environmental tag, displaying the environmental advantages of the respective piece of clothing over a comparable normal piece of clothing, has been introduced as one of the key elements for promotion of environmentally improved products.

A list of requirements has been composed for environmentally conscious manufacturing of cotton clothes. This list specifies the most environmentally benign processes and auxiliaries (such as dyestuffs) presently available for each production step in the product life cycle of cotton clothes. This list of requirements will be used as reference for future negotiations with suppliers on product purchasing. Only a few European suppliers would be able to meet the most severe environmental requirements. Most Asian suppliers will not be able to meet any of these. Consequently, a time-path has been designed for the
Box 1 Results of qualitative survey amongst consumers of Peek & Cloppenburg

- Consumers do not recognize the relationship between clothes and the environment. They think that the production of clothes does not create a significant environmental burden.
- The most important criteria for buying clothes prove to be:
  * perceived personal comfort of wearing, and style (men);
  * product price, quality, perceived personal comfort of wearing, and opportunities for combining clothes (women).
- According to the consumers, environmentally conscious clothes should meet the following requirements:
  * made of natural materials;
  * unbleached;
  * dyed with natural dyestuffs;
  * colour of the clothes should be ecru or a shade of brown;
  * environmental requirements for the production processes (which requirements is not known).
- One does not pay much attention to the labels of environmentally improved clothes. However, one should be able to recognize environmentally improved clothes easily. Therefore environmental labels or tags should be clear and simple.
- Consumers attach great importance to a consistent and comprehensive environmental profile of P&C: both the surroundings (floor-covering, lamps, display materials, bags, etc.) and clothes should be environmentally friendly. However, a 'biodynamic' atmosphere should be avoided.
- As an example of an environmentally conscious company, one may mention the Bodyshop. Sponsoring of environmental activities is highly appreciated.
- P&C should publicize its environmental concept. The publicity should be honest and provide the consumers with reliable information about environmentally improved clothes.
step-wise implementation of these requirements. It is based on the present diffusion of the more environmentally benign processes and auxiliaries in various clothes production areas around the world.

Phases 1 to 4 correspond to different emphases of environmental requirements:

- **Phase 1**: minimal environmental efforts
- **Phase 2**: reference environmental company policy
- **Phase 3**: environmentally conscious use of chemicals
- **Phase 4**: environmentally conscious production.

P&C will try to ensure that European suppliers work in accordance with the environmental requirements for phase 3 (desired requirements); if that proves to be too tight, suppliers will have to meet at least the requirements for phase 2 (minimal requirements). In the Far East suppliers will be requested to produce according to the requirements for phase 2 (desired requirements); if too tight, they will have to meet at least the requirements for phase 1 (minimal requirements) in order to be accepted as a supplier.

In Table 1 a summary is given of the type of environmental requirements for each phase of the product life cycle of cotton. Furthermore, the most illustrative environmental improvements, to be realized at the transition of one phase to another, have been summarized.

Furthermore an inventory has been made of the present supply of environmentally improved clothes, from present suppliers as well as from new suppliers. The supply of environmentally improved clothes is still limited. Most alternative suppliers use organically grown cotton (grown without the use of pesticides and artificial fertilizers) to produce garments, without taking care of the environmental burden caused by the processing of cotton (dyeing etc.) and manufacture of ready-to-wear garments. The prices are significantly higher than those for ordinary garments. Upon request by P&C, present suppliers of P&C (in Germany, Korea and Turkey) were able to produce garments within the MST and/or Okotex 100 standard. As a result, P&C has ordered environmentally improved knitwear, shirts, and trousers. These will be available in the stores in the course of 1994.

In order to illustrate the differences in approaches in each of the PRIMA company projects, Boxes 2 and 3 contain a short summary of the achievements made by Gamma and Vroom & Dreesmann.

The summaries in Boxes 2 and 3 illustrate that most attention has been given to environmental purchasing and promotion of environmentally improved products in the first phase of PRIMA (see also Figure 5). Within the environmental purchasing, product selection has been regarded as a common business practice, that fits in with the present role of retail traders. Supplier changes are feasible, but require more preparation as new trade relations have to be negotiated. Furthermore, long-term contracts with present suppliers might inhibit supplier changes in the short term.

‘Environmental product development’ in cooperation with suppliers should be regarded as an exception rather than a rule. In practice, this is limited to passing signals to producers, which in turn have to pull their own environmental product development. With regard to environmental marketing, the participating companies choose ‘product promotion’ and ‘eco-collection’ (lines of environmentally improved products) as their preferred strategies.

Towards a systematic working method

PRIMA explores the anticipatory approach; the retailer takes the lead in EIRA. In order to enable retailers to do so, a systematic working method has been drafted and will be evaluated and fine-tuned to the needs of retailers. This working method consists of the above-described conceptual framework, an organized methodology and external assistance and supervision.

The first practical experiences from companies participating in PRIMA show that EIRA can be developed following a project-based methodology. Within such an EIRA project, attention is given to one or a few product categories in order to generate results in the short term and to gain experience with EIRA. Such an EIRA project will normally include components of all three EIRA strategies (environmental purchasing, environmental marketing and environmental management).

The introduction of EIRA into a retail company should be regarded as a cyclic improvement process, with three major steps: project definition, project implementation and project evaluation (see Figure 6). The project definition should result in clear-cut EIRA projects. The implementation of these projects will have to result in practical changes in the product assortment and/or its presentation. The evaluation of such an EIRA project will have to contribute to the on-going integration of EIRA in the assortment policy of the retail company and to the definition of a new (set of) EIRA project(s).

The external assistance has to guide, inform, and stimulate the retail company, if necessary. Within the framework of PRIMA, researchers of IVAM Environmental Research and of the Institute of Applied Environmental Economics participate in special task forces established in the participating companies. These task forces have to identify, evaluate and implement the EIRA opportunities.

Opportunities and constraints

Although significant results could be achieved, EIRA does not yet fit smoothly into the present practices in retail trade. Progress in the participating companies gradually reveals the opportunities and limitations of the EIRA approach.

Firstly, developments in demand (by consumers) and supply (by producers) limit the EIRA opportunities
**Table 1** Summary of type of environmental requirements and anticipated environmental improvements

<table>
<thead>
<tr>
<th>Phase of production</th>
<th>Environmental requirements</th>
<th>Anticipated environmental improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>for . . .</td>
<td>phase 1 → phase 2</td>
</tr>
<tr>
<td>cotton growing</td>
<td>use of defoliants, and</td>
<td>*reduced use of pesticides</td>
</tr>
<tr>
<td></td>
<td>pesticides</td>
<td></td>
</tr>
<tr>
<td>opening and carding</td>
<td>process technologies (dust)</td>
<td>*reduction of dust production</td>
</tr>
<tr>
<td>spinning</td>
<td>chemicals, process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>technologies (dust, waste)</td>
<td></td>
</tr>
<tr>
<td>sizing and desizing</td>
<td>chemicals, quantity of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sizing liquors, process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>technologies</td>
<td></td>
</tr>
<tr>
<td>knitting</td>
<td>chemicals, process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>technologies (dust, waste)</td>
<td></td>
</tr>
<tr>
<td>pretreatment/bleaching</td>
<td>chemicals, process</td>
<td>*no bleaching (dark shades)</td>
</tr>
<tr>
<td></td>
<td>technologies</td>
<td>*no bleaching (all shades)</td>
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<tr>
<td></td>
<td></td>
<td>*elimination of hypochlorite detergents</td>
</tr>
<tr>
<td>washing</td>
<td>chemicals</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>*elimination of synthetic dyes</td>
</tr>
<tr>
<td>mercerizing</td>
<td>chemicals, process</td>
<td>*reduced use of caustic soda</td>
</tr>
<tr>
<td></td>
<td>technologies</td>
<td></td>
</tr>
<tr>
<td>dyeing</td>
<td>dyestuffs, additives,</td>
<td>*elimination of carcinogenic</td>
</tr>
<tr>
<td></td>
<td>process technologies</td>
<td>chemicals or slowly</td>
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<td></td>
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<td>degradable chemicals in</td>
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<tr>
<td></td>
<td></td>
<td>dyestuffs</td>
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<tr>
<td></td>
<td></td>
<td>*water saving circa 30%</td>
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<tr>
<td></td>
<td></td>
<td>*30% less dyestuffs in waste water</td>
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<tr>
<td></td>
<td></td>
<td>*50% less dyestuffs in waste water</td>
</tr>
<tr>
<td>finishing</td>
<td>chemicals, process</td>
<td>*no resin finish</td>
</tr>
<tr>
<td></td>
<td>technologies</td>
<td>*less use of finishing chemicals</td>
</tr>
<tr>
<td>printing</td>
<td>dyestuffs, chemicals,</td>
<td>*mechanical shrinking process</td>
</tr>
<tr>
<td></td>
<td>process technologies</td>
<td>*elimination of carcinogenic</td>
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<td></td>
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<td>or slowly degradable chemicals in</td>
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<td></td>
<td></td>
<td>dyestuffs</td>
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<td></td>
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<td>*less squandering of print paste (due to minimization of discharge printing)</td>
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<tr>
<td>washing process</td>
<td>chemicals, process</td>
<td>*elimination of synthetic deters</td>
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<tr>
<td></td>
<td>technologies</td>
<td></td>
</tr>
<tr>
<td>clothes manufacturing</td>
<td>chemicals, process</td>
<td>*minimization of waste</td>
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<tr>
<td></td>
<td>technologies, waste</td>
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<tr>
<td></td>
<td>treatment</td>
<td></td>
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<tr>
<td>packing</td>
<td>type and quantity of</td>
<td>*less waste</td>
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<tr>
<td></td>
<td>packing materials</td>
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**Box 2 Achievements at Gamma**

In this do-it-yourself store for construction materials, a lot of attention has been given to the identification of customer needs. Therefore, a qualitative survey amongst consumers took place. None of the respondents mentioned spontaneously the environment as one of the selection arguments for product purchasing. When considering the environment, consumers apparently focus on waste quantity (especially with regard to packaging) and health hazards (use of toxics). In most cases, environmental improvement should go along with additional improvements (such as cost reduction, consumers' comfort improvement and/or product quality improvement) to guarantee the successful introduction of an environmentally improved product. Additionally, opportunities for environmental product development have been explored and evaluated. In the case of 23 product categories, environmental improvements have been identified, which will be discussed with suppliers. Doors made from tropical hardwood and (latex) wall paints have been selected as priority products for environmental product development in cooperation with suppliers. In the case of the door and wall paints, environmental profiles have been made in order to identify the most important environmental aspects of these reference products. Furthermore, opportunities have been generated for simultaneous reduction of the environmental loadings and improvement of the product quality and consumers' comfort. In the case of the doors, producers have been contacted in order to develop the selected improvement options. The search for improvement opportunities for the wall paints has not yet been finished.
At the stationery department of Vroom & Dreesmann, the PRIMA project focused on three activities.

1. During the yearly promotional sale of stationery products for school-aged customers, about 30 environmentally improved products have been specially promoted with environmental statements on the shelf-extenders. Three claims were used: "non-chlorine bleached", "recycled paper" and "less toxics". This special promotion has been a success according to the sales managers. In 1994, this promotional sale with these environmental statements will be repeated. The company will try to extend the number of environmentally improved products for this sales promotion.

2. The activities aiming at package-free sales of pens, markers and fine-liners have resulted in two prototype wall units. These will be tested in one store during spring 1994.

3. The research on party goods has resulted in proposals for the introduction of a product line of environmentally improved table accessories and a product line of environmentally improved disposable crockery. Both proposals will be implemented in the course of 1994.

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**Box 3 Achievements at Vroom & Dreesmann**

At the stationery department of Vroom & Dreesmann, the PRIMA project focused on three activities.

1. During the yearly promotional sale of stationery products for school-aged customers, about 30 environmentally improved products have been specially promoted with environmental statements on the shelf-extenders. Three claims were used: "non-chlorine bleached", "recycled paper" and "less toxics". This special promotion has been a success according to the sales managers. In 1994, this promotional sale with these environmental statements will be repeated. The company will try to extend the number of environmentally improved products for this sales promotion.

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**Figure 5** Classification of EIRA activities in the three demonstration projects

**Figure 6** Cyclic step-wise approach for the implementation of EIRA in a retail company
have to modify this information in order to pass it on to consumers.

The EIRA opportunities for retailers thus face several limitations. From the results of PRIMA we draw the preliminary conclusion, that even within these boundaries there are good opportunities for environmental improvement of retail assortments (EIRA) by retailers in the short term.

In order to carefully assess the opportunities and constraints for environmental improvement of retail assortments, it is recommended to continue the practical experiments in cooperation with the retail companies and to finalize and fine-tune the working methodology. In order to be able to expand the EIRA activities to other retail companies, it is recommended that the impediments and incentives for EIRA are identified and evaluated in a systematic way. Furthermore, it is advisable to establish whether or not the developed conceptual framework and methodologies can be applied in other sectors of the retail trade (such as small and medium-sized enterprises and food stores).

Acknowledgement

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Notes and references

1. The first phase of the PRIMA project (January 1993-April 1994) has been executed by IVAM Environmental Research in cooperation with the Institute for Applied Environmental Economics (TMF, The Hague). The project has been funded by the Dutch Ministry of Housing, Physical Planning and The Environment. A second, evaluative, phase of the project started in the autumn of 1994
2. This methodology has been elaborated into a draft manual: ‘Environmental Improvement of Retail Assortments’ (In Dutch: Milieugerichte assortimentsverbetering in de detailhandel: handleiding en achtergronden), C.W.M. van Berkel (Ed.), IVAM Environmental Research in cooperation with the Institute of Applied Environmental Economics, Amsterdam/The Hague, 1994
3. These intermediate results have been published in: ‘Environmental Improvements of Retail Assortments: Results and experiences of the first phase of the PRIMA project’ (In Dutch: Milieugerichte assortimentsverbetering in de detailhandel: tussenrapportage Project voor de Introductie van Milieupassende Assortimenter in de detailhandel), C.W.M. van Berkel, J.G.M. Kortman and J. Krozer (Eds), IVAM Environmental Research in cooperation with the Institute of Applied Environmental Economics, Amsterdam/The Hague, 1994
5. MST = Markenzeichen Schadstoffgepruefter Textilien – an environmental standard issued by the German Gesamtentitel. The MST standard sets limit values to the residual quantity of (hazardous) chemicals in the end-product. Ökotex 100 also sets limit values to the quantity of chemicals in the end-product. The limit values for clothes have been derived from limit values for foodstuff.