Globalisation of markets and products: a challenge for environmental policy

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Abstract: Production of products has increasingly been relocated to countries outside the western industrialised area. Consumption of the same products in the west has increased. Policy instruments, used with positive effects nationally, have become more or less ineffective or irrelevant. Some environmental problems related to production practices have been relocated to other countries, while the import of products involves new environmental and health impacts for consumers. In integrated product policy, including phases of design, production, distribution, consumption and waste management, the possibility of using policy instruments to address designing and producing actors are highly affected by globalisation. The globalisation of production is a challenge for environmental policy as regards defining policy instruments with international validity. Case studies, the integrated product chain for batteries, clothing and meat, are used analysing globalisation and policy instruments. The empirical materials include legislation, propositions, protocols and interviews with officials in ministries, authorities, production and distribution organisations.

Keywords: intergrated product policy; policy instruments; production; consumption; batteries; clothing; meat.

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1 Introduction

For centuries, policy instruments were formulated from a national perspective. At least up to World War II, a large proportion of the products consumed within a country were also produced there. However, complicated and refined products can seldom exclusively rely on domestic materials and production capacity. Production of products and the markets for these products first tended to become more international in a regional way, with the exchange of materials and products between nations occurring mainly within neighbouring regions. From a Swedish perspective, the European market increased tremendously during the second half of the 20th century. Organising a union for free trade on a European market in 1960 was the first step in establishment of the European Union with an extended number of member states in 1992 (The Maastricht Treaty, 1992). As salaries increased in the west in pace with an increasing standard of living, it became possible for other countries, especially developing countries, to offer products with low production costs compared to those in western, industrialised countries. This process, which was facilitated by the development of appropriate logistics and global trade deregulation, is a fundamental part of the globalisation process. National policy and eventually also the European policy and policy instruments tend to lose their regulatory capacity in the globalisation of production and consumption.

A common current way to solve problems is to address an actor with policy instruments solving one problem at a time, for example, an environmental problem. Solutions are proposed and decided by the Government when problems arise. This kind of policymaking represents a command and control system (Jacob and Volkery, 2003), in which the strategy is based on a reparation perspective rather than a prevention perspective. Governance in such a perspective has to include reporting from the actors addressed or inspection of procedures by authorities to be efficient in solving environmental problems. However, actors have different assumptions and possibilities to follow laws, regulations or recommendations, for example, as a result of difficulties in keeping to schedules or in developing strategies and measures within the organisation to fulfil defined goals. Such problems tend to be more difficult to manage and monitor when producers are located in foreign countries. During the 1990s, such empirical problems led to the development of voluntary agreements as policy instruments in Swedish environmental policy (Helby et al., 1999; Lindén and Carlsson-Kanyama, 2002; Lindén, 2004). Experiences from the use of voluntary agreements as policy instruments in energy policy were also available from Germany and the Netherlands during the latter half of the 1980s (Jacob and Volkery, 2003). Voluntary agreements meant that the timetable for fulfilment of the political goal, level of goal fulfilment and strategies could be negotiated by the actors addressed and an authority. However, it is still an example of governance in a command and control system, although it includes delegation of responsibility to authorities, organisations, producers or local actors.

The EU declaration on integrated product policy presents a holistic perspective on products and their environmental consequences, taking into consideration the lifecycle of

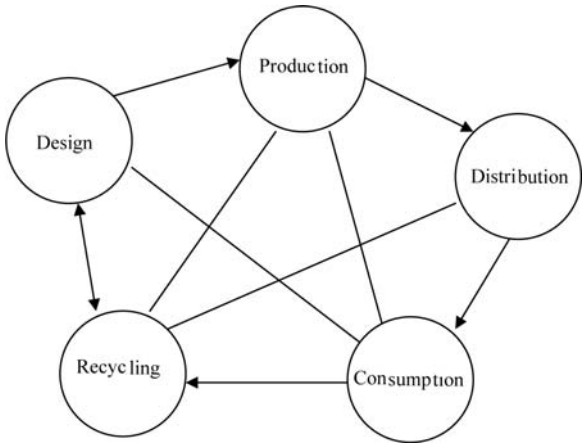
the product from the designer's desk to the recycling process (EUC, 2001). The product chain includes all steps in the production cycle from the choice of raw materials when designing products to ultimately taking care of materials in waste management and recycling (Gereffi, 1999; Gibbon, 2001). A number of actors are involved in different phases of the lifecycle of a product. During the *design* phase, decisions are made on the composition of the product, such as material use, function and design (Lindén and Carlsson-Kanyama, 2005, 2006). During the *production* process, methods and materials to produce the product in an efficient way and to guarantee quality norms are developed. During the *distribution* phase, the products are marketed and sent to shops for presentation and sale. The customer uses the product during the *consumption* phase and decides how to handle the product when it is worn-out. During the last phase, *waste management*, the product is recycled or sent to destruction. The main actors in these phases are the designer, the producer, the conveyor and the retailer, the consumer and the waste manager. In all the five phases, actors are addressed by policy instruments regulating the design and handling of the product from the cradle to the grave. However, in globalised markets products can be produced and consumed in countries with very different ideologies when it comes to environmental policy. The political power to control the actors in a product chain has definitely become more weak from a national perspective, which is a challenge not the least for environmental policy.

A product's lifecycle can seldom be traced to one single location or even to one country. In modern societies most products are global, at least when it comes to phases such as design, distribution and consumption. These three phases have impacts on how to handle waste and recycling. National policy is consequently not sufficient to prevent current or future environmental problems and the European Union thus has an important role to play in harmonising integrated product policies, at least between European member states. The problem is how to handle globalisation of integrated product policy.

2 Theoretical perspectives

The five phases during the lifecycle of a product mentioned above represent a logical order from the cradle to the grave in a product chain. They represent some sort of timetable in the development and use of a product. However, when it comes to policy measures relevant during the phases, the policy instruments often form a network whereby instruments used in one phase establish restrictions for other phases (Figure 1). The intention expressed in the Swedish Recycling Act (Prop. 1992/93:180) is for example to reuse material from worn-out products as much as possible. Consequently, what is done in waste management has an impact on what can be done in the design phase, for example, using recycled material for a new product. Use of recycled material can affect production costs in cases where recycled material or components are cheaper than new materials. This may lead to a lower price of the product for consumers. The direct relationships affecting each phase in a policy chain also create cross-relationships and a more or less complex network of actors. The more severe the environmental impacts from a product, the more restrictions by policy instruments addressing actors in different phases are to be expected.

Figure 1 Network relationships within the lifecycle of a product



Source: Lindén and Carlsson-Kanyama (2005, 2006).

Policy in chain processes, compared to networks, differs in several respects. In a product chain, environmental problems are located in a defined phase and instruments are implemented by addressing and controlling specific actors identified. The policy strategy is developed step-by-step through all phases. There is thus a risk of overlooking or even ignoring the side-effects of instruments used in one phase on activities in other phases. A step-by-step implementation process represents a process-orientated policy strategy as shown in Figure 1. A network-orientated implementation process, on the other hand, focuses on products consumed and their environmental impacts, that is, has a product/consumer perspective (Meuleman et al., 2003). The problem of preventing or remediating environmental impacts is a question of systems affected and not only a series of identified and defined problems in a product chain. The network relationships have to be taken into consideration already when designing the policy strategy and policy instruments. Compared to the process perspective, policymaking in a product/consumer perspective is extended over time and addresses large numbers of national actors, who in their turn may be dependent on material produced abroad.

Inefficient production processes have long been regarded as the main cause of environmental problems in industrialised societies. The main solution proposed for these problems is to replace old and polluting technology with clean technology (Murphy, 2001). However, when production is globalised, it is not only product components that are imported for use in national production but also complete products directly intended for distribution, sale and consumption. Recent changes in national production systems mean that the whole phase of production in integrated product policy is located abroad, either in a company within a national concern or in a factory outside national control. A consequence of importing products produced in foreign factories is that important aspects of product design also move beyond control, for example, quality aspects in the choice of materials and use of chemicals. National policy controlling the fulfilment of clean production has lost the actors to be addressed in the production processes.

Research focusing on the implementation of clean technology has shown that the role of leadership in organisations is at least as important as technological innovations in the modernisation processes. The combination of technology and leadership has been found to be important for environmental improvements, while also yielding an economic profit

(Gouldson and Murphy, 1998). Processes of ecological modernisation are to a great extent driven by integrating environmental goals into organisations (Mol, 1995). However, ecological modernisation is not a process parallel to the development of technology and leadership. When production processes change in terms of technology or geographical location, there is a need to reorganise management, for which handling the supply of products in line with domestic demand is a challenge. Modernisation of production in industrial societies has to proceed in both a national and global context. Modernisation processes in general create a general need and specific requirements for organisational changes in industrial societies. There seems to be a reflexive relationship between industrial and social processes. Although consumption was not integrated in the early development of theories about ecological modernisation, it has become evident that technological change leads to demands for change in other phases in the lifecycle of a product in order to avoid environmental impacts.

Production processes provide important incentives for ecological modernisation but also incentives for changing patterns of consumption in society. Individual preferences for improving individual well-being are important, but at the same time the supply of modern products and the role of producers as a pressure group cannot be neglected (Spaargaren, 1997). In globalised markets, importers or distributors more or less adopt the role of production actors by acting as agents for quality criteria demanded by customers but also criteria targetted in national environmental and health policy.

The role of policy-making is to observe, highlight and influence such processes from ideological aspects, for example, by environmental protection, ensuring production of healthy and sound products, saving fauna and flora etc. An international trade in consumer products thus provokes an expansion of focus in policy-making from design of products and production processes to also include distribution, consumption and waste management.

3 The research problem

The purpose of the project *IPP Chains: Policy Instruments in Networks and Processes* was to analyse the interaction between the effects of policy instruments in all phases during the lifecycle of a product. A starting point when choosing products for case studies was to capture the variation in environmental impacts during the design, production, distribution, consumption and recycling phases of the product lifecycles. Three case studies were performed, concerning batteries (Lindén and Carlsson-Kanyama, 2005, 2006); textiles/clothing and meat (Carlsson-Kanyama et al., 2006). The production chains of all the three products clearly reflect the ongoing globalisation, in that increasingly large parts of them are located outside Sweden. In fact, for some of these products it is only consumption and waste management that takes place within Sweden. Common to all these products is also that, they have quite a long history of policy measures aimed at reducing the environmental and health problems for consumers in society. They represent different kinds of products (practical use, wearing and eating) (Table 1). The time-span of the product lifecycle from the design to the recycling phase ranges from a few months to several years. The chosen products in the case studies differ in relation to consumer response, which is expected to have effects on distributor and importer behaviour and to place demands on design and production actors when production is located in foreign countries.

Table 1 Sample of products analysed in three case-studies

Product	*Time-span of product cycle*	*Method of consumption*	*Production*
Batteries	Several years	Practical use	Globalised
Clothing	1–12+months	Wearing	Mainly globalised
Meat	Some years	Eating	Partly globalised

In analysing the research problem in each case study, theories about integrated product policy and consumer/product perspectives were used to evaluate the fulfilment of goals defined in Swedish environmental policy regarding the reduction of environmental impacts during the lifecycle of the product. In addition to describing the policy instruments used, the case studies were intended to answer the following questions:

- In what ways are policy instruments used, implemented and interlinked for goal fulfilment?
- In what ways are actors in different phases addressed by policy instruments?
- In what ways have product-specific policy instruments been accepted and implemented by actors? What are the obstacles and advantages?
- How have network relationships between actors in different phases been affected and what are the results?
- Have process-orientated policy instruments been effective in goal fulfilment and in preventing environmental problems in the future?

In the present comparative analysis, the following questions are analysed and discussed:

- What are the problems and shortcomings of national policy instruments when production of consumer products is globalised?
- What differences are there in the influence of policy instruments on products in relation to use patterns?
- In what ways can national policy instruments have impacts on environmental problems in a global perspective?

4 Methods

In all case studies, a number of empirical materials were used to allow the issue to be analysed in depth:

- Administrative material of government origin: proposals, investigations and laws.
- Administrative material from authorities, for example, directives, handling strategies, protocols, communication documents addressing the government, ministries, authorities and actors affected by the policy instruments.
- Interviews with key persons representing producer unions, producers, distributors, importers and officials in ministries, authorities and organisations.
- Documents and assessments.

5 Results

This analysis of environmental policy and the efficiency of policy instruments in national and global comparative perspectives regarding batteries, clothing and meat is mainly restricted to the use of policy instruments in the design and production phases of the product chain. However, some aspects relating to the distribution and consumption phases are discussed to underline the differences in policy analysis between products.

5.1 Batteries

The policy instruments used in the battery chain had two purposes. The first was to *control* the flows of heavy metals in order to minimise the exposure of humans and nature to toxic metals. The second was to *prevent* such flows by encouraging substitution. In order to *control* the flows, a number of regulatory instruments were used, such as demands on labelling of products, making it compulsory for municipalities and retailers to accept used batteries from consumers and then send them for recycling and legislation regarding taxes being levied on importers of environmentally damaging batteries according to the Polluter Pays Principle (Lindén and Carlsson-Kanyama, 2006). The taxes collected were then used to finance recycling and large-scale information campaigns directed at the general public about the importance of recycling. The large stakeholders in this process were, and still are, the Swedish Environmental Protection Agency, the Ministry of the Environment, the Swedish Battery Association representing importers of non-rechargeable consumer batteries and several other branch organisations, the Swedish Federation of Trade and RVF – The Swedish Association of Waste Management.

In order to prevent heavy metal flows, there have been threats of sales bans and legislation regulating the amount of heavy metals allowed in batteries, as well as a general appeal to importers to substitute whenever possible (Table 2). The most important stakeholders in this process have been the Swedish Environmental Protection Agency, the city councils of the three largest cities in Sweden, the companies importing batteries to Sweden and their branch organisations (Lindén and Carlsson-Kanyama, 2005).

Swedish national policy follows a vertical implementation strategy, addressing actors in phases of the product chain one at a time (Lindén and Carlsson-Kanyama, 2005, 2006). Actors addressed include producers during the design and production phase, importers and retailers during the distribution phase and municipal waste management organisations for recycling. Legislation and economic instruments in combination are used to address producers, importers and retailers. The Swedish Environmental Protection Agency is responsible for control.

Environmental taxes paid by importers of batteries containing heavy metals have been used since 1987 in Sweden and they have been progressively increased (Table 3). The taxes are collected and funds are administered by the Swedish Environmental Protection Agency.

Table 2 Overview of different types of policy instruments used in the battery chain

Goal of the policy instruments	*Type of policy instrument*	*Authority*
Control by recycling and collection schemes	Legislation about labelling and recycling	The government and the Swedish Environmental Protection Agency
	Legislation about import taxes and monitoring to ensure that taxes are paid	The government and the Swedish Environmental Protection Agency
	Information campaigns directed at the general public	Authorities at national and local level, branch organisations
	Voluntary agreements	Swedish Trade Association
	Bans on importing certain types of batteries	The government and the Swedish Environmental Protection Agency
Prevention by substitution	Information campaigns directed at the general public	National authorities and local authorities, branch organisations
	Legislation about substitution and supervision	The government, the Swedish Environmental Protection Agency and some municipalities

Table 3 Environmental taxes for importing batteries containing heavy metals, 1998 – present

Year	*SEK per kg*			*Legislation*
	Alkaline batteries	*Button cells*	*Nickel-cadmium batteries*	
1987–1990	23	23	13	SFS (1986:1236)
1990–1997	23	23	46	SFS (1989:974)
1997–1999	1000	1500	300	SFS (1997:645)
1999	500	500	300	SFS (1997:645)

Source: Lindén and Carlsson-Kanyama (2005, 2006).

Monitoring whether taxes are actually being paid by importers has been the weakest point in the Swedish implementation of policy instruments in the battery chain. The importance of efficient supervision increases as the taxes are raised (Lindén and Carlsson-Kanyama, 2005). Over the past decade, the main concern of taxes has been nickel-cadmium batteries. Substitution of cadmium will probably be more important when it comes to national policy in the future.

However, in a time-span of four decades, design and production change. Nowadays, there is no national producer of batteries in Sweden. Thus the policy intention to address producers is no longer possible. Importers and distributors, the third phase in the product chain, becomes more important (see Figure 1). Many of these can escape paying taxes as there are many actors who are largely unknown to authorities. The Swedish Battery Association identified this situation and wrote to the Environmental Protection Agency in 1991 stating that "it is of the utmost importance that the Swedish Environmental Protection Agency creates procedures to make inspections of companies". However, inspection activities declined, the reason being that when Swedish environmental legislation was reformed in 1999 into a comprehensive Environmental Code, by

omission it did not include a proper legal foundation for inspection. The consequences for suppliers and retailers were substantial. Availability on the market of new products driven by batteries expanded tremendously. In hand-held tools, for example, batteries are permanently installed, so it is not possible for users either to change or remove them. A substantial number of such 'battery products' have been introduced onto the Swedish market by a large number of producers and especially an increasing number of importers. Thus products of global origin have increased on the Swedish market. In a letter in 2003, the Delivery Association of Electrical Hand Tools writes that "during a meeting with members it was discussed why Swedish authorities do not have an interest in the battery law being upheld in Sweden" and the members concluded that "authorities do not take measures against companies breaking the law even after repeated reminders". The Association gives examples of companies that break the law but note that the Environmental Protection Agency has not pursued them. One such example is a supermarket selling a hand-held drill with a rechargeable battery at SEK 239, despite the fact that the tax for the battery alone would amount to SEK 350. The same Association estimates that the taxes for rechargeable batteries in hand-held tools, where the use of nickel-cadmium batteries is still common, are paid by only 50% of the suppliers.

Nevertheless, taxes are considered a very important policy instrument for substitution by several suppliers. Apparently the policy adopted by Swedish authorities has led to a supply that differs at least from other countries in the EU, where fewer products than in Sweden are supplied with rechargeable batteries (Lindén and Carlsson-Kanyama, 2006). The suppliers interviewed believe that the use of nickel-cadmium batteries will not disappear completely in the foreseeable future without increased taxes or a ban on their sale. "With current taxes and without a ban, nickel-cadmium batteries will persist". According to the suppliers, an important step in the right direction would be more efficient monitoring of environmental tax collection or consumers demanding environmentally friendly batteries.

Powerful policy instruments and control systems that are applied in an efficient manner have impacts on the development of products produced nationally but also on the development of products in a global perspective, assuming that importing countries have efficient instruments to control importers. Such administrative measures are of particular importance for products used by consumers for practical everyday purposes.

5.2 Clothing

In the middle of the 20th century, most textiles consumed in Sweden were produced nationally. During the decades that followed, these products were replaced by imported textiles produced in low-cost countries, including countries in Southern Europe, the Baltic countries and over the past 15 years countries in the Far East, for example, India and China. National policy concerning textile production very early focused on the situation for workers and decades later on the use of chemicals in dyeing and washing products from health and environmental perspectives. With mainly domestic production, use of chemicals was under sufficient control nationally and was supervised by the Swedish Chemicals Inspectorate (Carlsson-Kanyama et al., 2006). However, the situation proved to be very different when clothing for sale in Swedish companies and shops was produced abroad. In the 1990s, the media reported health problems such as coughing, respiratory distress and skin reactions among employees handling imported clothing in shops. Official analysis confirmed that chemical residues were present in imported

clothing. For example, it was found that benzene and formaldehyde substances were used in order to produce non-shrink garments (Kemi, 1997a). Hearings involving the Swedish Ministry of Environment, authorities, industries and distributors showed that there was a tremendous lack of knowledge about chemical residues in imported clothing among Swedish importers.

The growing awareness about the problems among importers and distributors led to a number of activities, including a request for a list of inappropriate chemicals (Kemi, 1997a) although legislation concerning prohibition of sales of clothing with impacts on human health was introduced in 1961. This prohibition was subsequently included in Swedish Environmental Law. Thus the old Swedish legislation was integrated into the minds and activities of importers and distributors although it lost its relevance on the agenda when production was relocated abroad. Complaints from the employees and consumers served as alarm signals. These were taken seriously by importers and they started a dialogue with the authorities to map the situation with chemicals in clothing from an environmental impact and human health perspective. Chemicals in clothing became a challenge for importers as:

- About 50% of imported clothes contained chemical residues harmful to health or the environment (Kemi, 1997b).
- More than 10,000 chemicals for dyeing textiles were in use. The harmful effects of some of these are still unknown.
- The process producing textiles, fibre-production excluded, has extended to over ten different steps (Teko, 1996).
- The product chain for clothing ranges just over a season. Colours are very dependent on fashion.
- It is extremely difficult to get an overview of the use of internationally and locally produced dyes in foreign production.

Importers relied on one of two standpoints concerning chemical residues in clothing (Carlsson-Kanyama et al., 2006). Some importers had little trust in advice about chemicals in imported textiles and did not accept it as a problem. Other importers and, in particular, large and well-known companies acknowledged the problem (Kemi, 2002). They developed strategies including dialogue about production orders to influence the production of clothing in an acceptable way from the perspective of Swedish recommendations for environmental policy, but also from a perspective protecting customers from negative impacts on health.

The first strategy was aimed at getting good products in dialogue with producers abroad. Environmental aspects and economic aspects were combined in clothing production as a successful strategy:

> "Minimising use of resources, that is to say water and chemicals, reduces environmental impacts. At the same time you pay less for water and chemicals, which makes your products more competitive" (quote from a representative of an import and clothing company).

Combining national environmental policy instruments with business economics is a good way of influencing production abroad and decision-making using voluntary agreements. Clothing companies accepted a responsibility for the environment and health as a challenge of quality in their business policy. So far some importers and clothing

companies have noted success in their ambitions. On the other hand companies also argued for "… some sort of EU-investigations … and legislation in the long run. But while waiting for formal policy instruments we use principles of substitution and precaution" (quote from a representative of an import and clothing company). At the same time such processes can be developed into feed-back processes improving consumption in importing countries as well as improving environment and production processes in producing countries (Shanahan and Carlsson-Kanyama, 2005). Compared to the importance of legislation, controlling organisations and taxation systems for products with a long-lasting product chain, for example, batteries, the shortcomings of such policy instruments are evident for products that are extremely dependent on fashion and taste among the customers.

A second strategy was to develop a labelling system for textiles and clothing. Such a strategy proved to take long time from design through production of clothing until at last a label was added on products for sale (Carlsson-Kanyama et al., 2006). The time-consuming process made it impossible to use labels on products designed in line with recent fashions. The process of investigations and qualifying for a label made it impossible to keep up with high fashion. Some companies designed a special collection for environmental labelling. However, these collections became quite expensive, partly due to the labelling process. At the same time, the demand from customers was not large enough to reduce production costs.

The conclusion from large importing companies was to continue with voluntary agreements with producers, on-site inspections and using a Code of Conduct – "a document where producers agree to fulfil laws and international conventions from social, ethical and environmental perspectives" (quote from a representative of an import and clothing company). At the same time it is important to cooperate with other importing companies internationally to improve demands on suitable production in accordance with national standards. This strategy may also be important for environmental policy in a global perspective.

5.3 Meat

For more than one hundred years, production and distribution of food have been regulated and controlled using policy instruments aimed at producing food in a safe and hygienic way. Sanitary aspects and safety have been targeted in all phases of the product chain during the history of food policy (Carlsson-Kanyama et al., 2006). Since World War II, Swedish farming has undergone periods of rationalisation. The starting point was fusion of farms to get opportunities to increase livestock numbers and to use more efficient equipment in meat production. This development has continued to a more specialised production of food, but also to differentiation of tasks in the product chain for meat. In the last decade of the 20th century, methods for handling manure and slaughter were important issues in policymaking. The instruments used ranged from legislation to economic subsidies and control systems addressing farmers and slaughterhouses (Carlsson-Kanyama et al., 2006). All instruments used for solving the problems in these respects have so far had national aspects in focus.

However, internationalisation of markets, changing restrictions on food imports and free trade have led to expanding markets for food. Freezing and vacuum technology for food transport have opened global markets for both fresh and frozen food. In the late 20th century, the consumer market for meat underwent a globalisation process. Swedish

importers provided frozen meat from Australia already in the 1980s and at a lower price than meat produced nationally. The start of the globalisation process was quite slow, as Swedish consumers were committed to Swedish meat and trusted Swedish meat over beef produced abroad. At the same time, closer and more organised relationships was developed between producers and distributing organisations. A network of actors united in relationships with a long tradition is certainly an important factor for developing loyal customers resistant to innovations on the meat market (Klintman et al., 2006). However, Swedish imports of meat from abroad increased tremendously during the 1990s. Beef from Ireland, England, Germany and later on Argentina and Brazil are now commonplace products in Swedish food shops. The suspicious attitudes of Swedes to imported beef were rekindled when BSE hit livestock, especially in Britain. Imports from a number of European countries were stopped and control programmes for safe beef products were introduced. Consumer attitudes in favour of Swedish products and a desire to be informed about the origin of products emerged (Ekelund and Tjärnemo, 2004). Consumers seem to be extremely sensitive to the quality of food products (Lindén, 2001). Distrust in quality and inability to monitor quality increased the demand for Swedish beef and meat in general. Health promotion definitely always gets higher priority than environmental problems in such situations (Halkier, 2004; Klintman et al., 2006; Lindén, 2001). Consumers are provoked and mobilise their views either individually or collectively in strategies of political consumerism (Lindén, 2005; Micheletti, 2003).

Importers handled the situation firmly. They took the initiative to voluntarily label all meat products with the country of origin (Carlsson-Kanyama et al., 2006). The measure immediately proved to be appreciated by consumers and the sale of Swedish products increased. The introduction of labelling of meat was a rapid process, with importers having the responsibility for labelling. No quality aspects, either production or products, were involved in labelling, just farm and country of origin.

Labelling of beef products was subsequently regulated by a decree from the European Union starting in the year 2000 (Carlsson-Kanyama et al., 2006), which allowed customers to trace meat products from farm to shop and vice versa. The new labelling rules were easily followed by distributors, who were already used to labelling and who adapted easily to a European system controlled by national authorities (Carlsson-Kanyama et al., 2006). To avoid controversy about the design of labels, distributors formulated rules valid for all meat products and not only beef. These agreements among distributors "meant that competitors monitored each other with name and shame consequences if some party did not follow the agreed instructions". No authorities were involved in this kind of informal monitoring.

Compared to labelling administered by authorities, for example, that for clothing, labelling of meat was smoothly implemented. However, demand and sales change quickly when it comes to food, that is to say edible products. Consumers respond immediately when threats to personal health are identified (Halkier, 2004; Micheletti, 2003). Producers and distributors then have to respond immediately, otherwise private food strategies may change in the direction of decreasing demand for meat products. During the period with serious BSE attacks in cattle, this happened to some extent among consumers (Lindén, 2005). Thus the use of policy measures differs in efficiency due to the type of product and consumer response when markets are globalised and when unexpected problems arise regarding either health or the environment.

6 Conclusions

The efficiency of policy instruments addressing actors in the design, production and distribution phases was analysed for three products: batteries, clothing and meat. A common feature for the products is that design, production and distribution have quite a long political history in Sweden. The actors involved were traditionally addressed by policy instruments in order to produce safe products from the perspectives of human health and environmental impact. As long as the products were produced by Swedish actors in Sweden, most of the policy instruments were successful in achieving their aim. However, the second common denominator for the products analysed is that production has now become globalised. For example, all batteries sold on the Swedish market are produced abroad nowadays. A substantial proportion of textiles for clothing is produced abroad and an increasing proportion of meat sold in Swedish shops is also produced abroad.

However, these products are different and used in different ways and for more or less individual needs. Another difference is that the time-span of the product chains differs. Batteries are used to facilitate practical functions, for example, screwdrivers, lawnmowers and saws. Clothing is used for reasons of warmth, comfort and being in line with fashion. Meat is used for food, hunger alleviation, nutrition and taste. Use situations differ in intimacy to individual use patterns. This analysis revealed a difference between products consumed when it comes to consumer awareness and politicisation of activities to allow safe products to be purchased.

Concerning batteries, the awareness among consumers that batteries should be recycled is high due to numerous information campaigns. However, in practice it is difficult for consumers to perform this task, as many batteries are built-in and difficult to remove. Distributors have complained about inefficient administration in monitoring and taxing importers of batteries containing cadmium and especially those importing hand-held tools with permanently installed batteries. Substitution has been delayed and the use of rechargeable batteries containing cadmium persists. Consumers find it difficult to discover the contents due to inappropriate declaration. National legislation, control and taxation systems proved to be efficient when importers were few but have become much less efficient since the number of importers increased. The situation is further exacerbated by the increase on the Swedish market in the number of everyday products with fixed batteries. From a global perspective Swedish environmental policy concerning batteries have improved the development of environmentally benign batteries. Other importing countries got the opportunity to supply their consumers with the same batteries, when producers suspected a growing demand of batteries minimising the use of heavy metals.

Imported clothing, on the other hand, caused health symptoms among employees and consumers handling and wearing clothes. Negative reactions made importers and distributors aware of the problem. They analysed their products, asked Swedish authorities for information about damaging chemicals and integrated Swedish legislation and recommendations about chemical residues into textile and water use in dyeing processes in line with the processes of ecological modernisation. This strategy proved to be more efficient than labelling of products characterised by a short product chain. The integration of Swedish health and environmental policy into negotiations with foreign producers ended up in more safe products and at the same time a spill-over effect of Swedish environmental policy to textile-producing factories in other countries.

These results are highly valid for big importers, who sometimes cooperate with international companies. At the same time there are a number of small importers without proper control of their imported clothing products. However, the impacts of solving environmental problems and environmental policy in developing countries as a result of globalising textile production remain to be analysed.

Meat products have a short product chain and are intended for direct ingestion. Negative impacts on health and environment become apparent through consumer fears of for example, being infected. The individual use of the product, and especially direct physical contact, provokes feelings of activity, where consumption is avoided. The BSE outbreak in livestock increased the anxiety about buying meat when consumers were unable to identify the country of origin and producer. Political mobilisation is rapid when health is threatened. Importers and dealers immediately took care of the situation and decided to label the products with facts about the origin. The labelling process was not inspired by national policy, just consumer reaction. However, BSE disease led to a formal process in the EU and its member states, which culminated in a labelling programme for identifying the meat products from farm to shop. Consumer reactions also influenced the importers to negotiate about the quality aspects of imported meat from countries outside the European Union. Thus consumer reaction is important in formulating the pressure for adopting measures not only in formal policy processes, but also among the market-based actors.

National environmental policy faces a number of challenges in formulating policy measures. They tend to be mainly restricted to controlling national production. However, national policy and measures are shown to have impacts on global actors and importers. When it comes to products for everyday use by consumers, national policy and control systems have to be well-organised and efficient to support the stated aims. When it comes to products for direct ingestion or intimate use, consumer reaction easily provokes opinions that influence the processes on markets as well as policy processes.

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