REFERENCE POINTS FOR SUSTAINABLE DEVELOPMENT POLICY : PRODUCTION AND CONSUMPTION

SUMMARY

INTRODUCTION

The present research « Reference points for sustainable development policy : production and consumption », aims at making the concept of sustainable development operational, by viewing and analysing the economic system from the viewpoint of the three dimensions of sustainable development : environmental, economic and social. This stress the importance of a joined study on production and consumption. The integration of these two kinds of concerns in the same research seems to be necessary and promising, since the sectors of production and consumption are integrated in our economic system and as they are part of the same Chapters in international agreements (Agenda 21, Climate Convention) to which Belgium subscribed.

In order to jointly study the sectors of production and consumption, we propose to identify factors which contribute either to the unsustainability of the system, or to its sustainability. This study is necessarily multidisciplinary, as the problems of sustainable development are.

OBJECTIVES

This research aims at developing a good understanding of the sectors of production and consumption, by identifying the factors influencing the sustainability or the unsustainability of behaviors. The goal is to make the concept of sustainable development operational so that it can be taken into account at the political level. We seek to identify ways of change, « levers for a sustainable development policy », according to the title of the program in which this research fits, and we endeavour to translate our results into political recommendations.

This research is multidisciplinary and is integrated, due to the set of social problems posed by the sustainable development and the nature itself of the "objects" of the market mechanism, namely the products. These are the results of the production processes, goods of exchange between the sectors of industry and the households, as well as consumption goods of the households.

The research team gathers the following disciplines : economy and management, law, social psychology, sociology and demography. By tradition, some of these areas are open-minded to various disciplines and they use as well quantitative as qualitative approaches : this is the case for management and demography. Others, as social psychology constituted a theoretical framework tested by many empirical research. Within the framework of this research, it would have been useless and probably sterilizing to want to build a single conceptual framework that would have been precise enough to be tested empirically, but broad enough to include the various disciplinary points of view. Consequently, each research area refers to the paradigms of the disciplines to which it belongs.

GENERAL METHODOLOGY

The object of the research is multidisciplinary, the approaches are managerial, legal, sociological and of social psychology : they gather the complementary expertises of several social sciences.

Each of the parts of the report is characterized by a particular disciplinary filiation. The first relates to the sector of production and belongs to management sciences, while adopting a conceptual framework inspired from social psychology. In the second part, which concerns sociology and social psychology, the consumers' practices are analyzed. Lastly, the third part concerns the regulatory framework and it analyzes various legal instruments being able to facilitate the co-operation between the producers and the consumers, so that they produce or buy more environmentally friendly products.

However, these various disciplinary approaches were somewhat adapted in order to fulfill two requirements : each study (materialized by one of the three parts) has to be integrated in a coherent whole, and it has to lead to recommendations towards the political or economic actors - this scientific posture not being common in sociology and social psychology -.

In the first two parts, the analysis of the sectors of production and consumption was carried out according to a comparable methodology, which combines on the one hand, the collection on a large scale and the statistical analysis of many quantitative information, and, on the other hand, the collection of qualitative data and their analysis by suitable methods. The quantitative information offers a good statistical representativity, a large sample and many information, mainly on the practices and perceptions of the questioned people ; the qualitative data are characterized by their level of depth.

The third part is devoted to the regulatory framework analysis. This is made by the way of a cross analysis between the sectors of production and consumption and it uses the following methods : inventory and comparison of the Belgian and European legal provisions, critical documentary analyses.

RESULTS

1) The production

The salient results that can help to develop levers for a change towards sustainable behaviors on behalf of the industrialists are the following (Callens, 2000) :

Research enabled us to identify the motivations that constitute the starting point for environmental actions of the companies, and to understand the related decision-making processes. We indeed identified the factors for environmental protection within the companies. We brought a theoretical justification of these factors and their process (Callens, 2000). We established a measurement of intensity and a taxinomic measure of the environmental answer, and we built an explanatory model of the environmental answer, integrating the various identified factors : attitude of the firm towards the environmental answer ; perceived stakeholders pressures ; obstacles ; business factors (size and branch of industry mainly).

The firms' *motivation* most likely to lead to the action is of financial type : the company will invest in environmental actions, provided that these enable the firm to reduce costs. On the other hand, the managers do not expect to profit from new market opportunities after having implemented environmental actions.

The most influential *stakeholder* is the national or regional legislator. Some actors of the company also have a considerable influence, and they are likely to impulse the change : they are the top management, the owners/shareholders and the employees. Local population, environmental organizations, press/media also hold an important role. But the market dimension does not seem to be a potential factor of change.

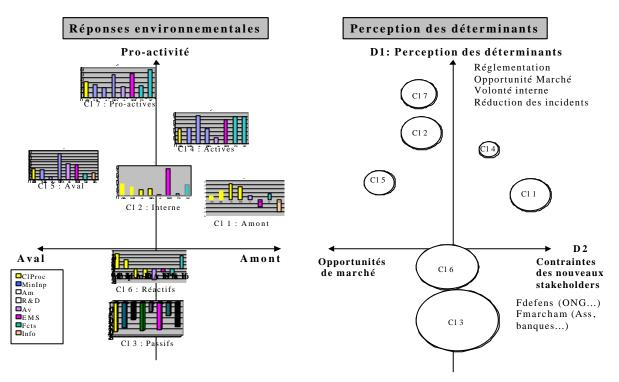
Obstacles of financial and technical types constitute a barrier to the implementation of environmental actions. Problems of information also arise, and especially, the lack of competing asset constitutes an obstacle to the change.

In terms of relations between factors and actions, the following points summarize the whole of the results :

- The more the firm's attitude is in favour of environmental answer, the more the firm is active in environmental matters.
- The more the firm strongly perceives environmental pressures from the stakeholders, the more the firm is active in environmental matters.
- The larger the firm, the more it is active in environmental matters.
- The least the company perceives the obstacles related to the setting of environmental answers, the more it is active in environmental matters.
- The size of the firm exerts an influence on the intensity and/or the sign of the relation between the firm's attitude and the intensity of its environmental answer.
- The perceived obstacles exert an influence on the intensity and/or the sign of the relation between the firm's attitude and the intensity of its environmental answer.
- The degree of perception of the stakeholders pressure influences the intensity of the firm's environmental activity, by the means of its attitude.

We also distinguished seven great types of firms' behaviors vis-à-vis the environmental problems : the passives ; the reactives ; the medians (upstream, inside, downstream) ; the actives ; the pro-actives. This classification suggests a non exclusively evolutionary path for the company : there is a path from passivity to pro-activity, however at an intermediate stage, the median stage, the company chooses a class of behaviors with actions characterised as "upstream", "downstream" or "inside".

Lastly, the following graph summarizes the results of the environmental answers related with the factors of influence. On the left, we classified the various groups of companies, according to the intensity of their environmental answer (vertical axis). We classified the companies of the group "medians" according to the type of environmental answer : in the center, the companies act in-house and set up an EMS ; on the right, the companies act upstream by for example, exerting pressures on their suppliers ; on the left, the companies act downstream by for exemple, recovering their products at the end of the lifecycle, reducing packaging, ... On the graphic at right, we reproduced the results of the discriminating analysis. The vertical axis **D1**, is the degree of perception of the whole influencing factors, and in particular the perception of the market opportunity and the legislation pressures. The horizontal axis **D2** set the new market opportunity against the constraint exerted by new stakeholders (NGO, media, insurances, banks, ...). A simultaneous reading of the two graphs shows that the different clusters of firms have similar positions in these two graphs (except cluster 2).



The results show that companies guided by the same internal and external factors and perceiving the same obstacles provide very similar types of answers to this new challenge of environment management. This is interesting in the sense that the search for levers for a policy of sustainable development can consequently be considered according to a segmentation policy of the industrial landscape, allowing the definition of levers that are relevant and specific to the policy target groups.

2) The Consumption

Summary

Nothing to choose between all waste !

To sort all the different kinds of waste is not of equal difficulty. On the one hand, the newspapers, papers, cardboard box and glass bottles do not seem to pose problems. The plastic bottles, the tetrabriks and food waste pose more problems. The respondents tend to sort the whole of various waste, especially if they say that they sort the waste that is the most difficult to be sorted. On the other hand, not sorting the most difficult waste to be sorted does not prevent from sorting "easier" waste. But when "easy" waste to be sorted is not sorted, we do not observe any recycling behavior, whatever the waste.

The link between sorting and other environmental actions

Whereas one could think that people sorting in a rather intensive way adopt definitely differentiated recovering and recycling behaviors, it is not empirically shown. There is a link between sorting and recovering in the sense that recovering behavior is more important when the sorting behavior is intensive than when the sorting behavior is almost absent, but this effect remains relatively low. With regard to the treatment of certain particular objects, one notes that recycling is more important for magazines and drugs and that gifts to associations is the option preferred for shoes and clothing. This pattern is primarily due to the action of people who sort, and among the latter to those which sort in a rather scrupulous way the complete set of waste (even waste that is difficult to be sorted). Indeed, except for clothing, people who do not sort overall waste tend to throw other waste in the dustbin.

In many results, we observe the lack of relation between sorting and purchase. In other words, the respondents generally do take into account criteria of sustainable development when they carry out their purchases. Even if it remains overall rather low, the most satisfactory performance in terms of buying products is for products with returnable and refillable packaging. The environmental protection as such is neglected and the fact that some products could generate less problems at the time of recycling is not taken into account at the time of the purchase. On the contrary, the fact of recycling does not seem to be related to the act of purchase and worse, the fact of recycling seems to justify some unconcern at the moment of acquisition. The qualitative investigation shows well that at the time of the purchase, the ecological arguments are only very seldom advanced, and that even if they are, they never constitute a determining criterion. The determining criteria are the facility and economic lower cost, and, to some extent, the taste, affinity for the product. Thus, it is by the way of one of these three criteria that a change could be produced at the time of the purchase.

It is clear that major incentives are absent and that, consequently, the consumers are not disposed to establish the link between their purchase, consumption and recycling behaviors. Maybe due to facility, practice or economic interest, they continue to support behaviors in such a way they have to make amends for it through recycling. No link seems to exist between the individual and societal benefit of recycling and the act of purchase. If a clear repercussion of the recycling costs was notified at the time of the purchase, the consumers would undoubtedly be likely to better consider it. Conversely, one could imagine to explicitly reward the consumers for decisions for buying products which are environmentally friendly. The idea of a eco-tax refund is to be debated.

The weight of external pressures

Summary

With regard to the pressure on recycling, the most of the people say to feel it important. The pressure is more important in Flanders than in Wallonia and it is the lowest in the Brussels area.

« Ils nous ont forcés à le faire, parce que de nous-mêmes, on ne l'aurait pas fait. » Few people have this clearness and honesty, and few people anticipated the change as regards sorting by a personal initiative. Thus the obligation of sorting waste made by the municipalities to their inhabitants seems at first sight necessary and effective. Necessary in a sustainable development viewpoint, summarized by several people by « *c'est pour un bien* » or by « *c'est pour un mieux* ». Effective, for several reasons, which should be specified because sometimes municipalities "obligations" are not obligation but only proposals. This "proposal-obligation" is accompanied by a financial constraint (the paying bag for the not sorted household refuse), by a vague sanction (rumour on the risk of fine, fear of remaining waste) and by certain information on the usefulness of the sorting and on practical matters. Finally, the municipalities set up a logistic organization to ensure the selective collections of waste.

One of the major points of this investigation is that the perception of a strong pressure on recycling leads to a sorting behavior. Interestingly, the pressure is more marked on the behaviors which are a priori difficult to pose. Thus, the sorting of tetrabric, the plastic bottles and the food waste largely profit from the introduction of a certain pressure.

Conversely from the sorting, the pressure seems to less affect the purchase behavior even if the influence is quite significant. It is clear that the links between the two environmental actions are closer for people supporting low pressure. Taking into account simultaneously the external pressure and the sorting behavior to predict the purchase, one notes that the relation between the sorting and the purchase is reversed. Such a pattern suggests that the sorting is strongly influenced by the external pressure, but that the introduction of the constraint does not generate a similar improvement of environmental criteria consideration when purchasing goods. Nevertheless, the introduction of a sorting obligation seems to promote sorting and waste recycling, and by this way, it allows to draw attention to the purchases criteria.

Back to the pressures which can influence the purchase behavior, we observe that it is desirable to see the public authorities linking, much more explicitly, sorting obligations and incentives, and purchasing obligations and incentives. As an example, one can imagine a disposal allowing to accumulate credits for a tax reduction relating to the waste collection when purchasing certain types of conditioning.

However, it has been showed that the obligation to sort domestic waste could have been generally respected thanks to the fact that it met a general concern (although this is never explicitly formulated) : the management of the "exteriorisation" of waste is founder of self. Indeed, the separation of self and waste takes part in the constitution of self and its specific territorial inscription. Domestic waste contributes to the construction of the identity of the members of the domestic group, and to the construction of the identity of the group itself, by the processes which the deposed objects require for their production (the purchase), their definition and their management. When categorizing, differentiating, relegating, throwing, sorting, recycling, giving or selling, the definition of self, of the couple or of the family is updated : the identity is built and is rebuilt in common acts. From these results, one can reasonably assume that the factors of identity are certainly also powerful determinants at the time of the purchase, in particular of foodstuffs, which produce most of domestic waste. It would be necessary to pursue the research in this way for proposing levers of action towards a more sustainable consumption.

The obstacles

The various aspects which can facilitate or not the realization of the sorting process do not seem to meet major obstacles. The only one is undoubtedly the space needed at home to manage the sort, which seems to pose a problem for a considerable part of the participants in the investigation.

The demographic and the psychosocial variables

The result of adding demographic variables to the external pressure is a better prediction of the sorting behavior. As well regional as marital status are of influence. Belonging to the Brussels area clearly decreases propensity to sort ; in the same way, living in Wallonia decreases the sorting behavior (compared with Flanders). Moreover, the sorting is a more important act for married people.

The psychosocial model predicts a little better the sorting behavior than the strictly demographic model. Interestingly, the values and two types of activity "to have participated to an action for environmental protection" and "to have read an article on environmental protection" significantly improve the prediction of the sorting behavior. Lastly, two potential obstacles significantly predict the sorting behavior, "the waste collection frequency" and "the space at home to sort waste".

The demographic model is rather poor in predicting purchase criteria. The variables which predict these are mainly diploma, marital status and health. On the contrary to what occurs with the sorting, the external pressure is not the best predictor of purchase criteria

consideration. In the complete model, nor external pressure nor diploma but values are the best predictors of purchase criteria consideration. Moreover, activities intervene in the prediction, more than the demographic variables.

All in all, the sorting is especially well predicted by the external pressure, by the fact of living in Flanders or Wallonia rather than in Brussels and by the values accorded to the domestic waste recycling. On the other hand, the best predictors of purchase criteria consideration are the values with respect to the domestic waste recycling, the fact of having voted for an ecological party and of having participated to an action for environmental protection.

It is noted that the external pressure involves a lower relation between the demographic and psychosocial variables on the one hand and the sorting and the purchase on the other hand. Another interesting fact relates to the best capacity of the variables to predict the sorting than to predict the purchase arguments. Lastly, we observe the important role of the psychosocial variables beyond the only demographic variables. For example, one improves by a factor 4 the prediction of the purchase arguments, from one demographic model to a complete model which includes also the psychosocial variables.

CONCLUSIONS AND RECOMMENDATIONS

In order to make the concept of sustainable development operational, one of the objectives of the research was to develop a good understanding of the sectors of production and consumption, by identifying factors of (un)sustainability in the managers and consumers behaviors. The various results of the research clearly suggest tracks of action for a sustainable development.

1) The production

Once the determinants of the environmental answer identified, the question arises on the relevant levers to set them in motion. We showed that a positive attitude vis-à-vis the environmental answer, the perception of the pressures of the stakeholders and the presence of some business factors influence the intensity of the environmental response of the firm. Consequently, which are the means which would enable us to act on these various factors ?

- To change the attitude of the firms and their beliefs in environmental issues constitutes the first lever of an environmental policy. It is a question of supporting a more positive attitude with regard to environmental actions, by demonstrating that companies can gain market opportunities, strategic advantages and image improvement. That supposes to replace previous dominating conventions by new conventions more favourable to "green" behaviors. The "success stories" and the scientific studies spread all over the business world constitute one of the means for pushing the new conventions in that direction.
- The stakeholders pressures (interns or external to the company) play a crucial part. Indeed, these pressures act on the environmental response by the way of the attitude, confirming the relevance of the school of contextualism, and the awakening that the firm takes part in a more global system to which it must adapt to survive. The stakeholders undoubtedly are the privileged actors for this change, provided that they exert the pressures. This result confirms the relevance of the "stakeholder theory" for this topic. The stakeholders should become aware of their capacity and they should be responsible for that. The official authorities could help them by setting up more means, adequate information systems as well as effective network of stakeholders.

Summary

- To remove obstacles also contributes to a reinforcement of perceived control on action and thus to a greater environmental activity. Nevertheless, this factor seems to play a less important part than the two previous factors, which tends to prove that the obstacles removal is not sufficient to develop a more environmentally friendly behavior. Perhaps, like Eagly and Chaiken say about the human behavior, such a factor plays a role, only in case of favourable attitude ? However, the obstacles removal (especially those of type "how") constitutes an additional mean to improve the environmental answer of the companies.
- Lastly, the moderating effect stresses the importance of a differentiated policy, according to various business factors. It is at least what we could deduce from the moderating effect of the variable "size". Indeed, the influence of the various beliefs on the environmental answer varies according to such business factors.

Up to now, the economists who studied environmental issues were concentrated on the levers suggested by the traditional theories : the legislation (political of the stick) or taxes aiming at the internalisation of externalities, two tools not so much popular within the business world. That supposed that the decisions of companies are based on rational economic criteria and that they result from cost-benefit analyses or obligations. In this logic, there is no place for cognitive rationality, subjectivity, preferences and beliefs. However, our work underlines the influence of other types of determinants and other types of rationality. Disciplines as marketing take that into consideration for several years, exploiting perceptions and beliefs when there is a question of "moving the products towards the consumers". Isn't it time now for the public authorities and the stakeholders to act in such a way with regard to the environmental problems ? Information and experiment remain the tools for change of reinforce new convictions.

However that does not mean that the traditional means are obsolete or unsuited ! The empirical study confirmed the major part played by the legislative constraint and this, whatever the type of company. But we propose a set of diversified "levers" and we suggest to move towards more communicational policies, underlining the benefits of an environmental policy. It is a question of "image relifting" of the question of the environment, so that it is not perceived as a source of constraints, but as a source of opportunities. To make the stakeholders aware of their capacity, to make them responsible and to give them the means for action on companies would of great utility.

2) The consumption

Summary

The most outstanding result on how the consumers set up for managing domestic waste relates to the obvious effectiveness of the external pressures in the adoption of a sorting behavior. People tend to set up recycling behaviors as soon as they state feeling a strong pressure for it. This constraint is usually expressed by a paying bag for not sorted waste. Moreover, the pressure is particularly effective for more complex behaviors which would have very little chance to appear apart from a militant context not very likely to expand in all the classes of the population.

It also appears that if changes in behaviors can be obtained, it is definitely more difficult to modify chains of mental operations : *«se torturer les méninges à savoir ce que ça va produire comme déchet »* when shopping. In this case, public policies are perhaps more convenient and we propose several tracks.

It appears that one way is to impose at the moment of the purchase, a certain number of practices favourable to sustainable development.

- One can certainly preach the introduction of what we call financial incentives, the "eco-tax refunds". This could be a VAT tariffs reduction for the more environmentally friendly product. One could imagine a compensation by some energy taxation or by a direct financing resulting from the recycling sector. Indeed, the fact of not having to treat waste constitutes a substantial economy and the recycling sector could directly intervene to prevent the waste by decreasing the purchase price of products which prevent its constitution.
- In the field of production, one can suggest to develop the principle of sustainable conditioning : that would be the obligation to provide conditionings fulfilling the requirements of sustainable development (eg. by the obligation to offer adapted formats of packaging -adaptation of capacities by categories of products- or of reusable refills for certain categories of products).
- In the retailing sector, one can also incite to oblige all the products of a given range to be available in the shelves of the supermarkets in a "sustainable version" beside the standard version. One can oblige the retailers to provide as much space and advertising to the sustainable version than to the standard version of the product.
- Just as any publicity for cigarette is supposed to warn the consumer on the danger on health, one can oblige publicities to inform about the environmental characteristics of the product and his packaging. More specifically, one could impose the products for which a sustainable version exists to mention it, with for exemple, an explicit mention of the ecological and financial advantages of the sustainable version. It is important to encourage, in particular thanks to the adoption of suitable legal rules, the ecological information beside and through the traditional promotional modes. It is the principle of the need for environmental information in publicity. Products standards could be established in order to meet certain general rules applicable to the markets : easily consulted databases, revision of the system of labels in order to integrate dynamic advances in companies, discount cards and promotions for environmentally friendly products.
- For prevention, one can undoubtedly strengthen the link between purchase and recycling and promote public awareness campaigns aiming at establishing, in a more systematic way, the substantial reduction of waste by a well better managed packaging and conditioning.
- One could also think of setting up systems who would bind psychologically as much as financially the purchase and recycling behaviors (as in the case of returnable glass for example).
- Lastly, we showed that the purchase criteria for a product are the price, the facility and affinity. These criteria would have to be combined with environmental criteria (the refills for upkeeping products are often preferred to other conditionings, not for ecological reasons, but for transportation facilities and use ; in addition, to tax superfluous packaging would make possible to decrease the price of products with less or without packaging). The application of the principle of the tax incentive for the producers and the retailers should make possible to decrease the price of products meeting environmental standards. On a European scale, the support of a reduction of VAT on products labellized for environmental, social and ethical reasons should compensate for their generally high prices.

Four factors seem to ensure the effectiveness of the selective waste collection systems : financial constraint, fear of sanction (financial or other), information and public logistic

Summarv

organization. These four factors constitute as many levers to improve the domestic waste sorting, and more largely, they could usefully intervene in any public environmental policy, even related to other aspects than waste management. In this field precisely, the financial constraint could provide a cost clarification, which could take the form of a reduction in the municipal tax on the refuse collection and of an increasing price of the paying bag, with the objectif to decrease the imbalance that people who do not sort their waste perceive between the required effort and the service offered. Information should be improved, in particular on the final destination of the sorted products and their use. The logistic organization could be facilitated by various means : reduction of the size of the bags for the sorted products (consequently reduction of the necessary space and time to fill them), offer of these bags, introduction on the market of the dustbins with several partitions, etc.

However, what can be the adjustment, inconsistency of public authorities will be pointed out by several people (why are the bags for sorted waste not made of recycled material, ... ?). A well balanced agreement has to be found in the public policies between the obligation to sort domestic waste and the risk of refusal from some part of the population of too much technocratic policy ("The Green Big Brother"). To avoid this, we suggest to diversify to some extent the offer of services facilitating the waste sorting, so that the citizen can select the most appropriate system. In our society which develops individual autonomy so much, such a diversified system would leave open various motivations for the same kind of behavior : act of citizenship, (more seldom) ecological reason, fear of penalty and feeling of personal freedom are as many justifications of people who sort their waste. Additionally, such a diversification of the services would also contribute to improve logistics.

*
* *

There is a quite important cost to change practices so that they are in conformity with sustainability, for companies (by the required investments) as well as for consumers (by the change of practices and the mental effects the change implies). In order to accept this cost, the companies motivation is the financial profit or the setting in conformity with a new regulation. Seldom if ever, financial advantage push the consumer to more environmentally friendly behavior, and the factor of major change is the external pressure coming from the official authorities (incentives on waste sorting) as well as from the market (if some recommendations we made were applied and cause a drop in the price of more environmentally friendly products).

Which are the benefits of these changes ? The producers mention the reduction of production costs, but they do not expect to profit from new market opportunities. The consumers mention the satisfaction to do useful things. However, the in depth analysis of discourse on the change of practices revealed many unconscious secondary benefits : the separation of self and waste takes part in the constitution of self and its specific territorial inscription. Domestic waste contributes to the construction of the identity of the members of the domestic group, and to the construction of the identity of the group itself, through the processes which the deposed objects require for their production (the purchase), their definition and their management. The identity is built and rebuilt in common acts aiming at the continuity of self, its coherence and self-esteem and claiming the unicity of self and its diversity.

These unconscious benefits for the identity are the consumers specific advantages, without equivalent for companies undertaking environmental actions. At the same time, competences for the change of the various economic agents - producers, retailers and consumers - should

be compared in suitable research : the companies often plead for a legislation based on a longer term, so that uncertainty can be reduced and anticipation of the change can be made with more accurate information ; the consumers do not ask for changes which they will have to carry out for the next years ..., from domestic waste sorting to the euro, shouldn't the consumer be seen reinforced in his competence for the change ... ?

Actions suggested by the companies are the awareness development and the education. If there is a need inside the company, for the employees as well as for the managers, it would also be necessary to develop a "green awareness" on a large scale, which would lead to a more attentive society to environmental matters ("*c'est une démarche de société*"). Education has to be delivered especially to young people. In that case, larger awareness will exist. This topic refers to the capacity of children to induce changes in their parents' behaviors, even in the adults behaviors in general. This stress the role of education (in family, at school, ...).

Will these changes in our production and consumption modes be powerful enough to imply other changes, which would relate to our relation towards the world and the environment ? In our society indeed, the socialization of the world is marked by predation and rejection - domestic waste is the daily proof-. Are other choices like the gift or the reciprocity possible, as some anthropologists (A. Caillé for example) affirm ?