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Environmental service-providers, knowledge transfer, and the greening of industry

Abstract

Recent development of "greening" in manufacturing firms, inspired by environmental legislation, client and stakeholder pressure, as well as changes in corporate strategies, have created a new market for environmental business services. The implementation of new managerial practices and instruments such as environmental management systems, auditing schemes, eco-labeling etc., but also the growing need for technical assistance are all reasons for the dynamic evolution of the demand for specialized external services. Knowledge based enterprises provide services, for example in the fields of technical development, management consulting, legal services, insurance, environmental due diligence, and marketing. This externalization can be considered a further element in the flexibilization of industrial production systems in a post-fordist context. In a first step, this paper presents some reflections on the functional and spatial organization of this special type of advanced producer services. In particular, networking activities between different service providers and manufacturing firms will be analyzed. In a second step, the role of these knowledge intense business services in the greening process of industry will be conceptualized. Particular aspects of co-producership and knowledge creation by interactive learning between service providers will be discussed. This will enable an illustration of the stimulus that external services may give to industrial change. The comparative character of this study – dealing with the Cologne area (Germany) and the Nord-Pas-de-Calais region (France) - will be underlined in the discussion of different styles of regional discourse as well as different ways of framing environmental problems.

key words: advanced producer services, corporate environmental performance, environmental services, industrial change

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1 Introduction

During the 1990s, a new segment of the so-called environmental industry emerged without having received much attention from economic geographers: the *environmental producer services*. They can be defined as knowledge intensive service firms, often highly specialized, which provide consultancy and technical assistance on environmental issues to manufacturing firms (see chapter 2 for a more detailed definition). This new market owes its dynamic evolution to several factors: Beside the general flexibilization process which tends to externalize production oriented services, both a changing legal and political environment as well as a growing influence of different stakeholders are considered to be crucial. As a result of the latter, more and more voluntary initiatives in the manufacturing sector are a further reason for the growing need of external advice in this field. A recent study of the OECD resumes this tendency:

Environmental regulations and standards set the broad framework for demand for environmental goods and services. There is a shift in regulatory focus towards economic instruments, incentives and voluntary agreements which concentrate more on overall environmental performance, and give greater flexibility in achieving environmentally-satisfactory solutions. This has been coupled with greater emphasis on clean technologies and products. Both provide new impetus to the supply industry. (OECD 1997:7)

We do not know much about the activities of those service providers, their specific location factors, their ways of networking with other firms or their requirements for the labor market etc. Even more interesting than the simple dynamic of this new branch is the influence it may have on the "greening of industry" process. As many scholars doing research on advanced producer services have pointed out, service providers usually have a considerable impact on the competitiveness and strategic planning of manufacturing firms. Coffey & Shearmur (1997:404) emphasize that "through their role in investment, innovation, and technological change, high order services play a decisive role in the economic development process, particularly in facilitating overall economic change and adjustment". R. Florida presents a survey in which 30% of the inquired manufacturing enterprises consider external consultants to be "key actors in pollution prevention efforts" (1996:92). Having a strong influence on the reorganization of manufacturing firms and a rethinking of their environmental strategies, environmental producer services are one of the "agents of greening" shown in fig. 1.

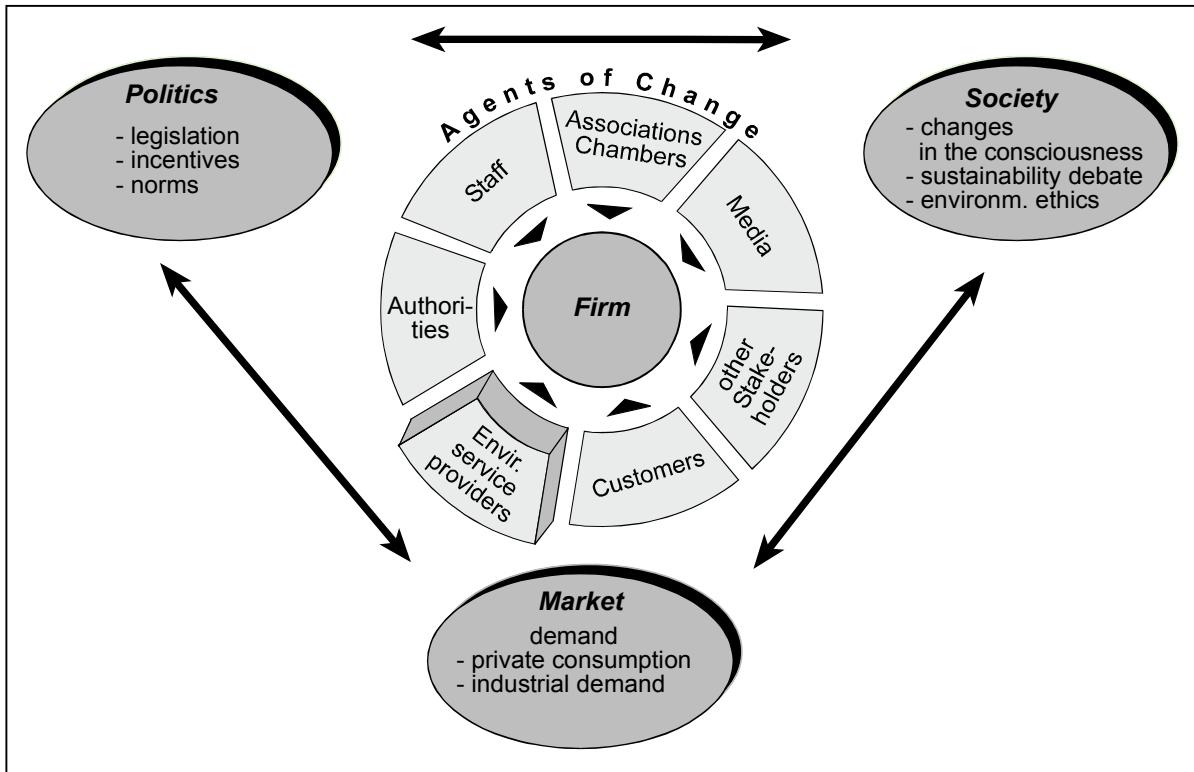


Fig. 1: Factors in the "greening of industry" process

To understand and to evaluate the contribution of the environmental producer services to industrial change, it is necessary to highlight their spatial and functional organization as well as their ways of interacting with manufacturing firms. Beyond that, aspects of knowledge creation, knowledge transfer, problem-framing and agenda-setting need to be considered. This paper will, first, give a brief overview of the different service activities linked to the corporate environmental performance of manufacturing firms. In the next step, the theoretical framework of a survey that is presently being carried out (conducted by D. Soyez and C. Schulz) will be discussed at two levels. At a more general level, the relations between changes in the political and social environment, the greening of industry and the emergence of new types of environmental producer services will be analyzed by means of a regulationist approach. Then, different theoretical concepts such as network approaches and inter-organizational learning processes are discussed. Due to the fact that the above mentioned research project deals with two regional case studies in Germany and France¹, intercultural aspects have to be taken into account, considering different framing patterns, regional discourse styles and constructivist issues. After this conceptualization, some methodological reflections are given on the empirical analysis of this topic.

¹ France: Nord-Pas-de-Calais region; Germany: "Regio Rheinland" (Cologne/Bonn)

2 Environmental producer services: definition and market characteristics

Since environmental producer services are a very heterogeneous group of service providers, a first approximation shall be reached by employing a general definition of the environmental business or of the "eco-industries". They "may be described as including firms producing goods and services capable of measuring, preventing, limiting or correcting environmental damage" (European Commission 1994:53). Environmental services do not only provide punctual advice or assistance to the solution of single problems (e.g. fuel accidents, installation of a filter system), but often contribute over a longer period to the remedy of ecologically harmful production processes or to the incorporation of environmental strategies. Their activities, therefore, range from "classical" tasks such as waste water treatment, solid waste management or air pollution analysis to more recent sectors like environmental management consulting, auditing, environmental due-diligence, legal advice or even specialized financial and insurance services. The following scheme is partly based on a classification given by the OECD (1996:11):

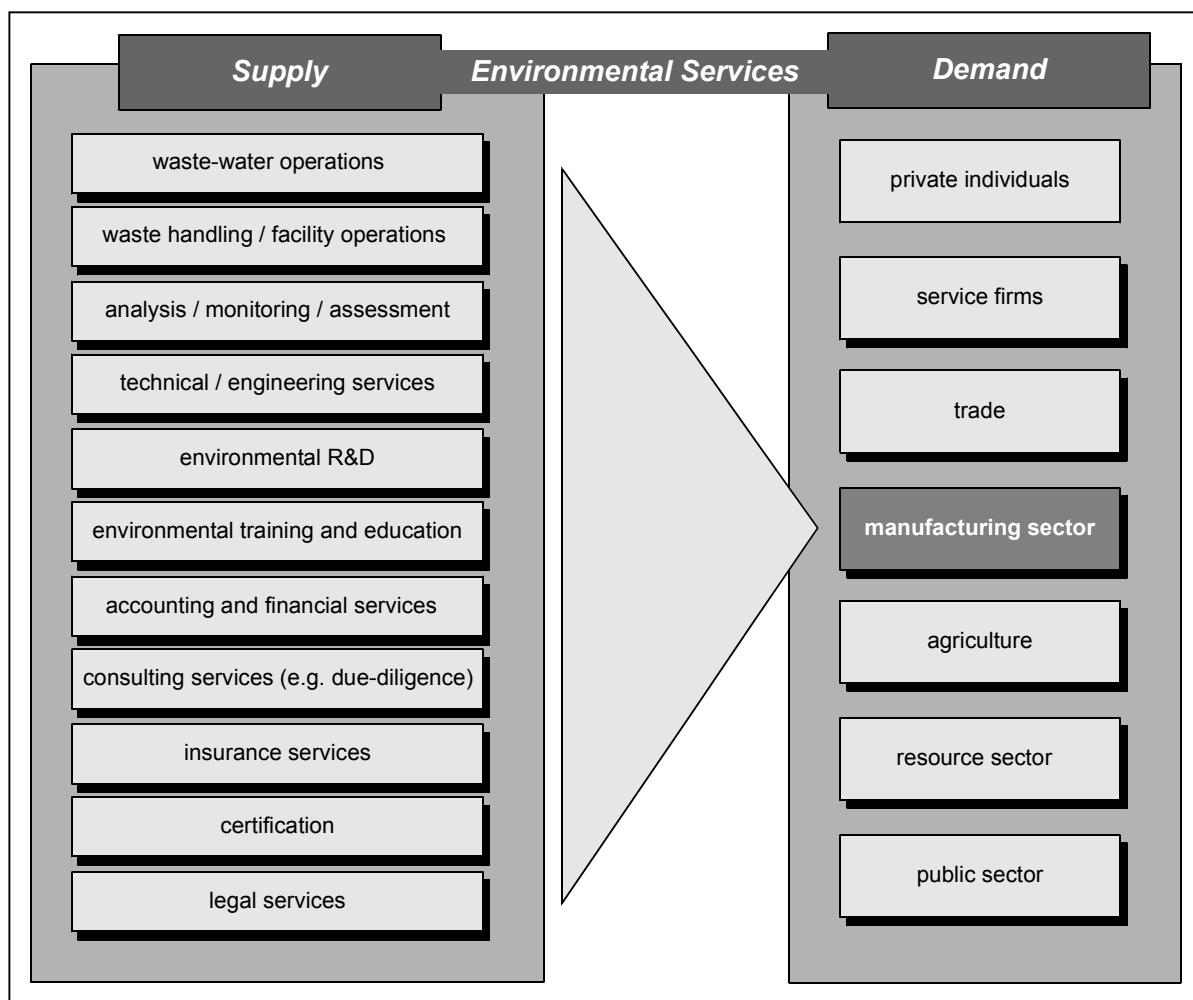


Fig. 2: Providers and client types for knowledge intensive environmental services

This paper focuses on the so-called "knowledge intensive business services" (KIBS) or "advanced producer services" (APS) (see Daniels & Moulaert 1991, Strambach 1993, 1994), i.e. services whose production requires an important knowledge input and is characterized by a high degree of individualization. Less knowledge intensive services or highly standardized services (e.g. waste transportation) are not examined. We also exclude services offered to other than industrial clients (public authorities, private consumers, other service firms), knowing that a lot of the providers serve both.

Since official statistics do not use the above mentioned or similar classifications, i.e. these types of service activities can be found in various branches, it is difficult to quantify their market share and economic importance. In 1993, about 7,600 companies in the US offered environmental consulting/engineering services with a turnover of US\$ 12 billion and a 16% growth rate, while the environmental business in the USA, as a whole, had a turnover of US\$ 132 billion with 11% annual growth (Kastner 1993:55). An analysis of the United Kingdom's environmental consultancy market in 1998 showed a growth rate of 10% (ENDS 1999:1), which is close to the market for traditional management consulting in Europe (15%), still being one of the most dynamic sectors (Glückler 1999:21). All regional and sectional studies dealing with environmental services are predicting a positive evolution, at least for the next decade (see, for example, Burtscher 1994, Caldwell & Smallman 1996, Horbach & Komar 1996, Sam 1999).

3 Environmental producer services: indicators of a post-fordist regime?

In accordance with Taylor, Bobe & Leonard (1995:59), "the business enterprise is the political crucible within which social, economic and environmental issues and forces meet and are played out in particular and specific spatial and temporal contexts". Similarly, Fuchs & Mazmanian (1998:201) stress the need for a "collective understanding of the greening of industry as a political, economic and organizational phenomenon". First we have to look at the general political and economic environment before discussing organizational topics like producer-client interactions in the service economy.

During the last thirty years, the growing awareness of ecological problems and the more sensitive attitude towards environmental issues has considerably changed environmental policy and economic strategies at least in the leading industrialized countries (see fig. 3). The tendency is towards a post-fordist regulation system, in which traditional command-and-control functions of the state are more and more substituted by the emerging power of

critical consumers, environmentally conscious stakeholders and governmental but market-oriented incentives. Most industrial corporations have begun to fundamentally rethink their environmental policies: "The conclusions businesses are coming to are that the environment issue will not go away, that standards will only rise, and that a proactive rather than a compliance strategy is for the best. This is the opportunity for consultants" (Caldwell & Smallman 1996:17). Enterprises are turning towards a proactive environmental policy, trying to become a "good corporate citizen", with more and more agreeing to voluntary initiatives (e.g. the chemical industry's Responsible Care Programme) or passing through environmental audits such as ISO 14001 or the European Union's EMAS (Tapper 1997, Vollmer, Braun & Soyez 1996). Here we can observe the emergence of a new accumulation regime which implies the need for permanent innovation and adaptation in environmental matters, generating a new demand for specific services, rarely to be provided in-house.

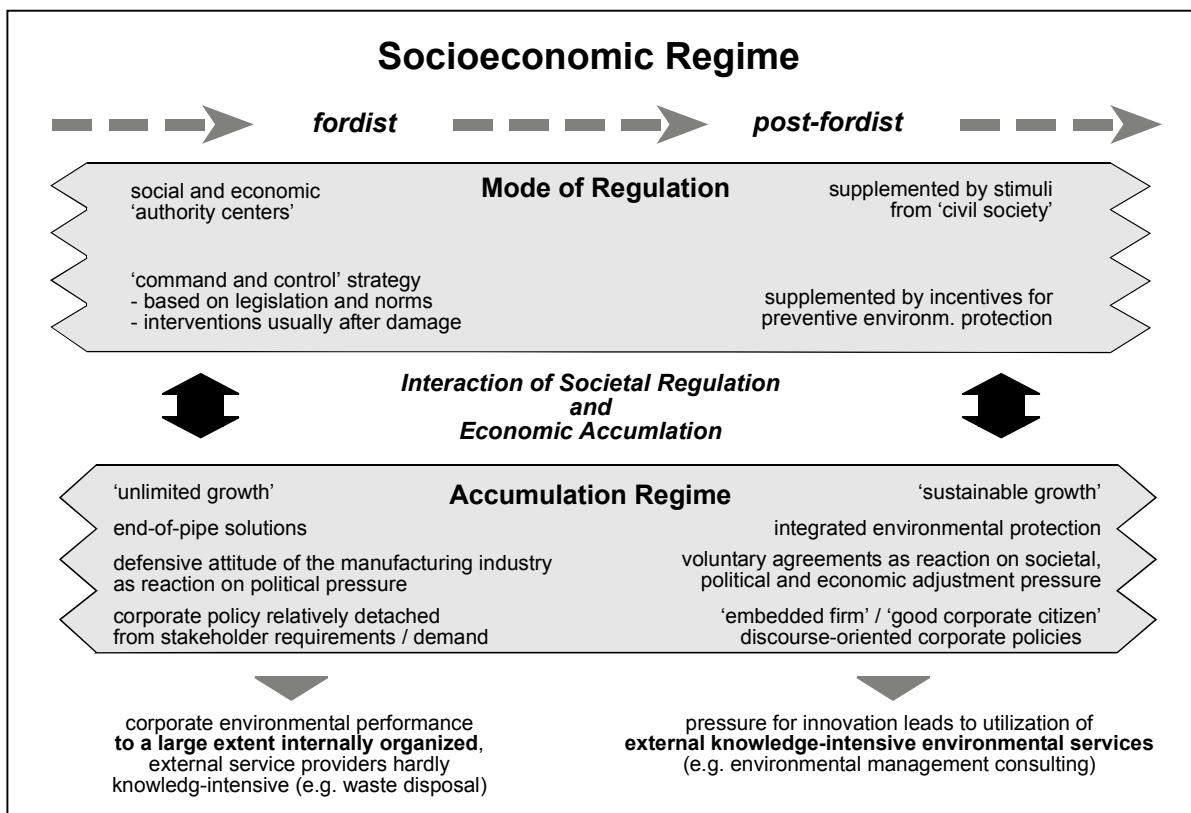


Fig. 3: Towards new forms of regulation and a changing accumulation regime

From an organizational perspective, some authors consider the greening efforts in the manufacturing industry as a result of a general reorganization process. "Does lean mean green?" was the title of a study conducted by the Massachusetts Institute of Technology (Maxwell, Rothenberg & Schenck 1993), which "suggests a relationship between lean

production and innovative environmental manufacturing practices" (Florida 1996:82). In general, as Wood points out, "experienced companies actually use consultancies more than inexperienced companies for broader management skills" (Wood 1996b:342). The MIT study provides empirical evidence showing that those enterprises which are innovative on general organizational issues, are also leading in their environmental performance. Nonetheless, the new market for service providers seems to be far more than a simple side effect of an ongoing outsourcing strategy. Banerjee even argues in the opposite sense when showing that in many cases the introduction of Total Quality Environmental Management Systems (TQEM) "has led to an enhancement of product quality and corporate performance as well", and that "environmental issues facing industry today have been reframed as quality improvement issues" (Banerjee 1998:166). By analyzing the externalization strategies and the quality of relationships between service providers and their clients, the following chapters try to shed some light on the real impact that outsourcing strategies may have on environmental matters.

4 Externalization strategies and modes of interaction

In accordance with Beyers & Lindahl (1996:352ff.), there are three main types of motivation for a manufacturing firm to externalize producer services:

- a) *pure cost-driven considerations*, based on a neoclassical view of the transactions cost approach, driven by the perception that outside provision is less expensive, related to a general downsizing strategy;
- b) *quasi-cost considerations*, where aspects of flexibility dominate, e.g. to reduce entrepreneurial risk, to manage an infrequent demand or to concentrate on core competencies;
- c) *non-cost considerations*, i.e. external services are purchased to compensate a lack of expertise, to get un-biased third-party information, to adapt to the growing complexity of management by using more specialist know-how or – in the long term – to benefit from buyer/supplier dynamics.

These categories may also reflect the importance conceded to the external service. While externalized services of the first category generally should be, in general, standardized routine services with no strategic impact on the client firm, the last category contains high order services of which quality or specificity is more important than their price. In terms of environmental producer services, we thus have to analyze the outsourcing decision process of each case of externalization in order to understand the strategic potential of the external input.

In a second step, the form of co-operation between a service provider and the client firm needs to be looked at. Here, the differentiation made by Tordoir helps to explain different intensity levels of producer-client-interaction:

- a) *sparring relations*, where consultancy services are supplied to (top)management and communication takes place on the same level in terms of information exchanges and competencies, based on a good interpersonal 'chemistry';
- b) *jobbing relations*, that are most common for professional business services, i.e. "typical in cases where the knowledge involved has a specialist and technical character in its widest sense, and where the client is a professional himself in the relevant field" (less interaction than a);
- c) *sales relations* with a "product-like character of services", which are developed beforehand by the provider. (Tordoir 1994:328)

In the case of advanced producer services, sales relations will be the very exception, whereas jobbing relations and sparring relations are the most common type. In our specific case, interactions with knowledge intensive environmental services are supposed to fulfill at least the criteria of jobbing relations. To be defined as a sparring relationship, they should be characterized by an intensive and continuous process of co-operation (or "co-production" in accordance with O'Farrell & Moffat 1995:121) with the client, working in the area of strategic decisions and the orientation of the firm's environmental policy. This could, for example, be the case when an external specialist is engaged to develop and install an environmental management system.

The following classification (fig. 4), based on Tordoirs proposal, is a first attempt to qualify the different environmental services in terms of their degree of interaction with the client. We have to admit that the dividing lines between these types are not clear and that there might be overlaps or real exceptions. For example, a training and education service could become a sparring relation when dealing over a longer period with the top management level or when developing a proper training concept for the whole enterprise. In contrast, eco-labeling can be a simple sales relation when it is a standardized certification act.

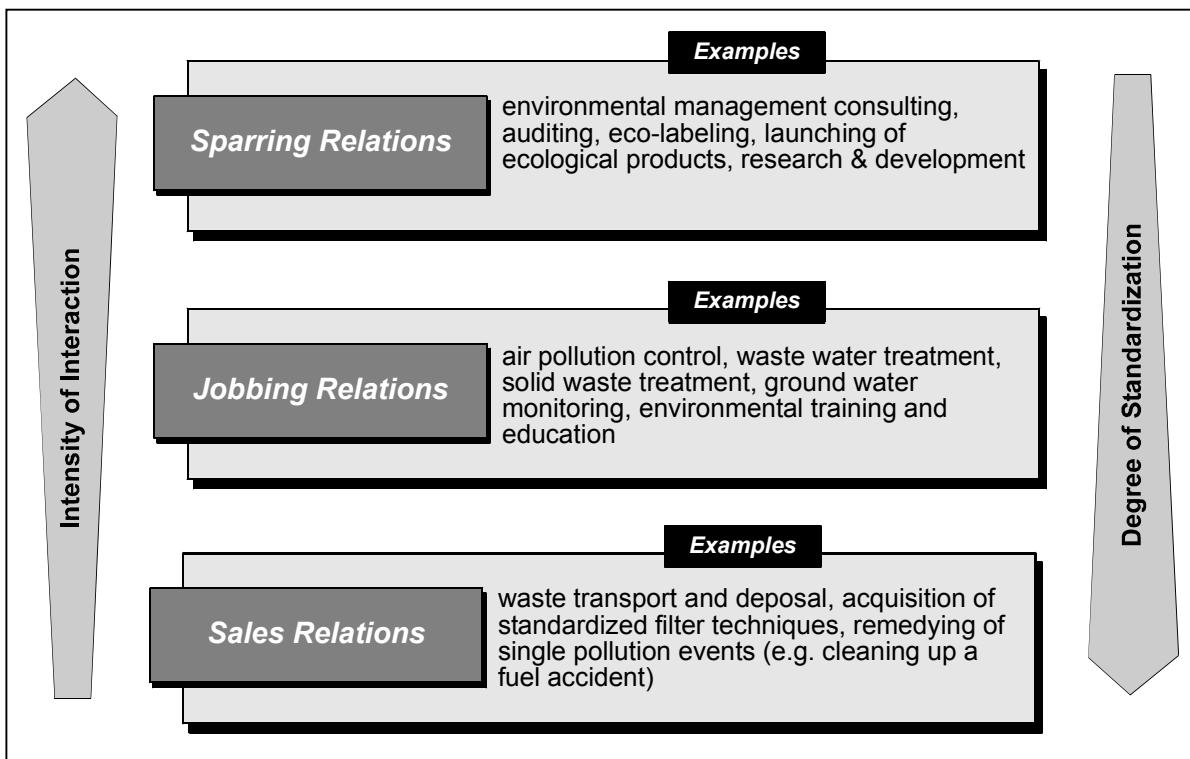


Fig. 4: Types of relationships between environmental service providers and clients

5 Networking issues - weak ties and strong results?

At first glance, the networking activities, not only between service producers and their clients, but also among service providers themselves (strategic networks / virtual organizations), are of geographical interest in terms of their functional organization, the building of clusters and their relationship to an institutional environment. The question, whether distance matters in the client-consultancy relationship, or whether there is a spatial concentration of service providers resulting in "clusters of specialist business service firms" (Wood 1996a:654), allows us to analyze the importance of these activities for regional development. In this context, backward linkages also have to be taken into account: "spatial proximity between producer services and the sources of creators of knowledge, information and technical ability is crucial. A given producer service establishment must therefore have linkages to specialised consultants, complementary producer services, research institutions, universities" etc. (Coffey & Bailly 1992:864).

In the area of corporate environmentalism and environmental services, intermediary institutions such as chambers, associations etc. play a significant role. Through their efforts to transfer actual information and to foster exchange and inter-firm relationships by offering conferences, workshops or simply "network dinners", they contribute to the emergence of local or regional networks. Rasmussen, who conducted one of the few regional studies on

environmental services, emphasizes this important opportunity for consulting firms to find partners for strategic co-operations during such informal meetings ("kaffeklubber"), organized through the "Dansk Komite for fast Affald (DAKOFA)" – an association of Danish firms handling solid waste (Rasmussen 1992:194).

In addition to this spatial aspect of networking and its impact on regional economies, we must also analyze the quality of such networks. In order to evaluate their potential for knowledge exchange and learning processes, we have to examine the basic features of inter-firm networks (Grabher 1993:8ff.):

- *reciprocity*: where lies the reciprocity or mutuality in the co-operation?
- *interdependence*: does this mutuality lead to interdependencies between networking partners?
- *loose coupling*: how are the ties bound, what is the organizational or contractual basis for co-operation?
- *power*: are there power asymmetries?

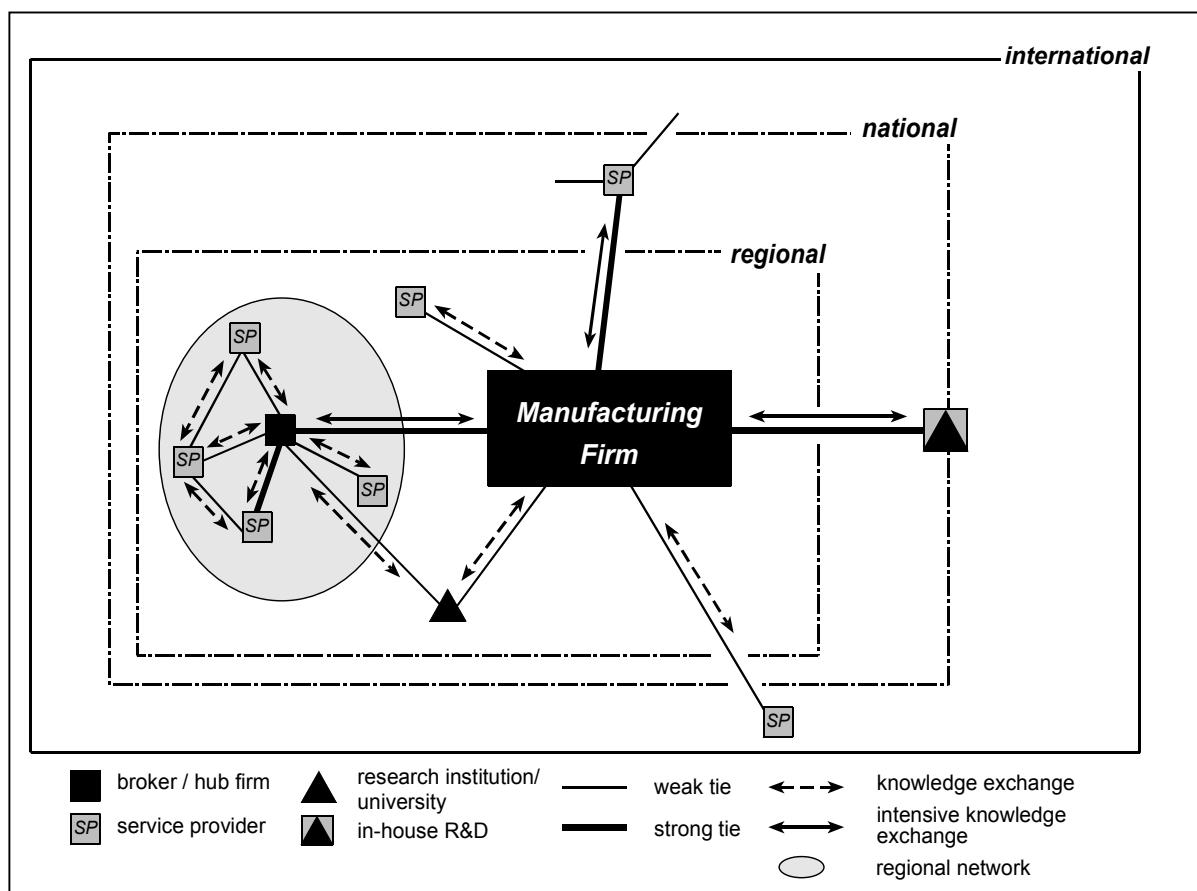


Fig. 5: Networking between service providers, clients and research institutions

Especially the last aspect, the "network topographies", with its unequal power relationships and its "circuits of power", merits more attention (Taylor, Bobe & Leonard 1995:69). It is evident on two levels. First, in the relationship between producer (environmental service provider) and client (manufacturing firm), where a governance by the client may play a role in very sensitive areas (e.g. influencing the results of expert reports). Second, in networks between different (specialized) service providers, where the coordinating role of one firm (broker) may result in a dominating position (see fig. 5).

Since it is evident that "a network organization extends the learning relationships to external sources of know-how" and the "diversity of information and experience-sharing needs is a crucial determinant in the externalization of knowledge services from industrial firms" (Monnoyer-Longé & Mayère 1994:305), the character of inter-firm learning processes may help to explain the impact service providers may have on their network partners.

6 Inter-organizational learning and knowledge transfer: key factors for the greening process?

Lundvall criticizes that the transaction-cost approach neglects the importance of interactive learning as an element of innovation and interaction between firms: "the most important processes determining the dynamics of the modern economy are actually processes of learning and change" (1993:53). Inter-organizational learning can be both a result of inter-firm co-operation as well as a precondition for it. In both cases, it should be seen as an element of strategic change that can considerably modify the identity of an enterprise (Prange 1996:174). Discussing "environmental comakership", Fuchs & Mazmanian concede inter-firm co-operation "the potential to foster greening through resulting technology transfer and increases in the pool of knowledge, interactive research activities and the development of international environmental standards" (1998:199f.).

Inter-organizational learning requires a particular attitude of the learning partner, a kind of openness towards new perspectives, meanings and solutions. Given this prerequisite, manufacturing firms may considerably benefit from external advice. Especially on environmental topics, this openness seems to be more frequent due to a need of expert assistance: "The lack of understanding and the uncertainty around environmental issues is a key factor that influences how firms learn to successfully integrate environmental issues." (Banerjee 1998:148).

Contemporary research in economic geography dealing with industrial change has to understand the structure of a learning process and the role of its main actors. In order to be able to evaluate the effect service providers have on the manufacturing industry (and vice-versa), it is necessary to distinguish types of inter-organizational learning and their different results. The simplest way of learning by knowledge transfer is the individual learning of a single member of an organization (e.g. an employee of a manufacturing enterprise learning by interacting with an external service provider). Here, even the transfer of "tacit knowledge" (Polanyi 1966) may become possible. Apart from this individual learning, Sattelberger (1991:15) distinguishes five possible levels for a learning process:

- a) representative learning of an elite (e.g. top management level);
- b) learning of other entities of the firm (divisions, specialist teams);
- c) change of the knowledge shared by all members of an organization ("organizational maps", "shared frames of reference", "community of assumptions");
- d) modification of the organization itself by incorporating learning experiences;
- e) use, modification and development of the organization's knowledge base.

This classification suggests a certain hierarchy or a certain quality level. Indeed, the levels a) and b) cannot only be the first steps in a corporate learning process. Levels c) and d) are more integral impacts of an external input: "Organizational learning occurs when it becomes embedded in the memory or in the collective consciousness of the organization as a whole such that this memory guides the behaviour of the members of the organization" (Banerjee 1998:149). Undoubtedly, e) has the farthest-reaching effect, more or less decoupled from the initial service performance. In our empirical research, we especially have to respect this relationship between different target groups and the way of valorization of new knowledge by the firm.

On the other hand, we find the "paradoxical constitution of the consultant's body of knowledge", i.e. that consultants automatically learn from the business that they are teaching (Willke 1998:123 cited in: Glückler 1999:10). The fact that inter-organizational learning rarely is a one-way knowledge transfer, leads to a high potential for backward learning effects, i.e. for transfer of explicit or implicit knowledge from the client firm to the service provider. This is knowledge that the service firm will use on other occasions and that it may transfer to other clients. Thus "environmental learning" (Banerjee 1998) can function in both directions in the relationship.

Although the "strength of weak ties" is often considered the crucial element of successful networking (Granovetter 1973), strong ties – as shown in figure 5 – may play an important

role in terms of knowledge exchange and learning processes: "strong ties are not irrelevant to information flows, and in fact decisionmakers appear to be influenced by their strong-tie network" (Bryson & Daniels 1998:269). We thus have to look very closely on the type of relationship and the level of confidence between the partners.

7 Does green mean green? Intercultural aspects and regional discourse styles

As already mentioned above, the two regions studied in Germany and France are characterized by different national and regional regulation systems, cultural backgrounds and political influences. Although there is a strong tendency to harmonize environmental legislation in the European Union (e.g. air pollution control, waste management, eco-auditing), there are still quite obvious differences to be taken into account. On the one hand, the framing of environmental issues through the manufacturing industry depends considerably on the way ecological problems are perceived in the population, which themes are claimed by environmentalists and how they are presented by the media. In many cases, the political reactions are part of this framing and are strongly influenced by more or less arbitrary agenda-settings – often very fragmented. Additionally, as Hunt, Parvis & Drake found out in their study on environmental attitudes and understandings of business owners or industrial managers, "shared concerns may be constructed and communicated through Trade Associations" and other bodies that "produce an awareness of an issue coupled with a perception of the necessity to act" (1997:10). As it has been discussed in chapter 5, dealing with networks, the role of intermediary institutions can be crucial.

Additionally, environmental service providers as "agents of greening" are themselves part of a larger context (as management consultants in general are): "consequently, management consulting is a locally, institutionally and culturally contextualised business" (Glückler 1999:35). Like other firms too, environmental service providers are embedded in a specific local or regional environment, are part of a social context "that is continuously constructed and reconstructed during interaction" (Grabher 1993:5). In this study, contextualization is of great interest and shall be analyzed by looking at the different regional styles of discourse and simultaneously by verifying cultural and professional socialization trajectories of the actors. Regarding the latter, both sides – individuals in the service firms as well as members of the client firms – have to be inquired.

8 Methodological aspects

The above conceptualized study started in summer 1999 and is, in terms of the empirical field work, based on the following scheme:

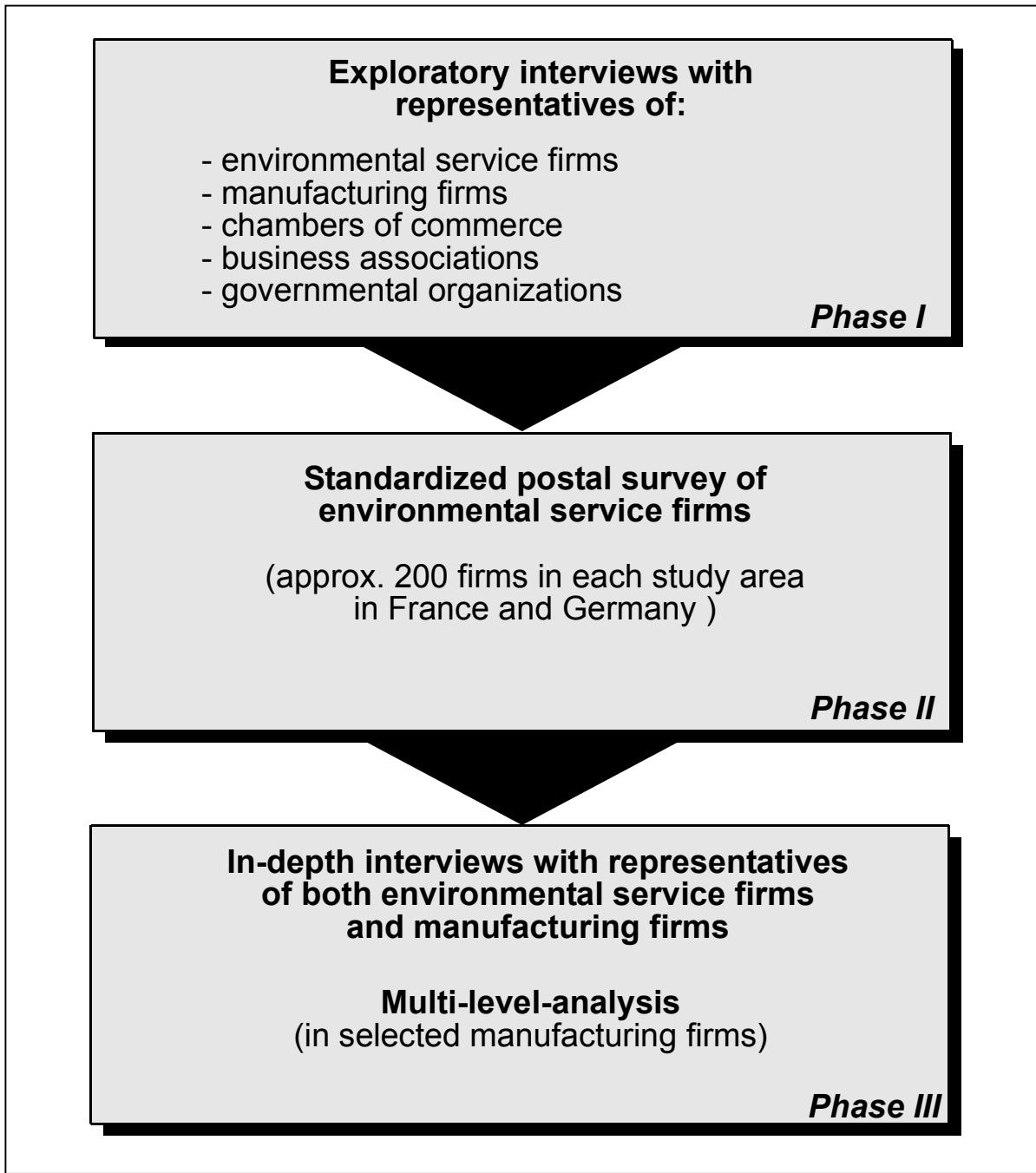


Fig. 6 : Organizational scheme of the empirical field work

The field work includes three phases. In a preparatory phase, a series of exploratory interviews with representatives of business associations, chambers of commerce, governmental organizations as well as service and manufacturing firms helped to structure and prepare

further steps of the study. The second phase contains a postal survey of about four hundred environmental service firms – two hundred identified in each area. The questionnaire used in this survey is almost completely based on closed questions and aims to collect general data on the evolution, structure, markets and client relations of the service providers. In the third and last empirical step, a selection of both service and manufacturing firms are consulted in form of in-depth interviews. On the manufacturing side, several larger enterprises shall be submitted to a multi-level-analysis inquiring members on different levels of the same firm (members of the top management / CEO; managers at the divisional level / head of department; technicians/workers at the operational level). The latter instrument enables a) a verification of the effect and the adaptation of external environmental advice at different levels, and b) an analysis of different perspectives of the same problem in order to get the most unbiased impression.

9 Conclusion

To illuminate the field of environmental producer services and their impact on industrial change through "environmental learning", different theoretical concepts and perspectives are necessary. Organizational and – to a certain degree – transactional approaches help to understand the spatial functioning and the networking of this new branch. The analysis of interorganizational learning processes with regard to intercultural and constructivist aspects is supposed to provide further insights.

Two other issues are going to be addressed in the present study: an increasing importance of internationalized services and the question concerning the limits for externalization of environmental services in a flexibilization strategy. First, growing internationalization activities of service providers as can be observed in many other fields also matter in the examined branch. More and more environmental consultants serve transnational corporations or get in contact with foreign clients through their activities with international firms (see for example O'Farrell, Wood & Zheng 1996:101, Rasmussen 1992:198f.). This internationalization is supposed to imply a cross-border transfer of knowledge and corporate culture to client firms in other countries. Thus the greening of industry process in many countries may be strongly influenced by the attitudes and strategies of several "leading" countries in terms of corporate environmentalism.

Second, there are certain limits for the externalization of environmental producer services, particularly in large corporations pursuing flexibilization and outsourcing strategies while

focusing on their core competencies. In the chemical industry, for example, many core competences necessarily include environmental issues. In other words, if too many services are externalized the firm risks to support an unintentional knowledge transfer because it becomes difficult to keep sensitive details of the production process secret.

Beyond these issues, further research should focus on aspects neglected in this study, such as the specific labor market requirements of this branch or the role of "epistemic communities" in the personal relationships between service suppliers and their clients.

Nonetheless, with the addressed topics and the various theoretical concepts on which the study has been based, we hope to shed some light on the dynamic and heterogeneous sector of environmental producer services. The insights given in this field are only one element in the fare more complex process of industrial change in ecological matters. Be it as it may, the environmental producer services are certainly not the least important agent in this greening process.

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