

Fachbereich Wirtschaftswissenschaft

Corporate Responsibility Cluster Potential in a Rainforest Region
- Autoparts Made of Natural Fibers in Brazil -

Dissertation

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To Alex, Norma and Rubens

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Introduction

Emerging global problems, such as the high increase of inequalities and the fast-growing shortage of natural resources, represent a challenge to the economic, social and environmental sustainability. An instance of these inequalities is the fact that the top 200 international corporations have had sales that are equivalent to one quarter of the world's total economic activity.¹

These companies have a big influence on our society, once they have huge financial, technological and economic resources. This raises questions concerning the role business plays in moulding tomorrow's society.² Investors, consumers, workers, labour unions, among other groups, expect that companies, especially multinational corporations, will assume their co-responsibility in the process of looking for a long-term business model.³

These growing concerns have led to a political debate on responsible business practices and sustainable development.⁴ Thus, several international principles have been formulated, such as those proposed by the *Organisation for Economic Co-operation and Development Guidelines for Multinational Enterprises*⁵ and the *European Commission Framework for Promoting Corporate Social Responsibility*.⁶

Therefore, the theme Corporate Social Responsibility has become a significant issue, which affects Business Administration theories and practices.⁷ Innovative companies are interested in strategically implementing social responsibility, since responsible business practices may positively affect aspects, such as *worker's motivation and retaining, efficiency and productivity, process and logistics management, company's brand and image*, among others.⁸

¹ Cp. Zadek, S. (1999), p. 27-53.

² Cp. UNEP DTIE, (2002), a.

³ Cp. Jakob, G. and Toyoka-Seid, C. (2003).

⁴ Cp. Collier, J. (1995).

⁵ Cp. OECD (2002).

⁶ Cp. Green Paper (2001).

⁷ Cp. Koslowski, P. (1999).

⁸ Cp. Ulrich, P. (1999).

However, a critical gap still remains between responsible management and macroeffects on sustainable development.⁹ Corporate responsibility (CR) management is mostly treated as a *microaffair*. CR has been reduced to voluntary initiatives of firms,¹⁰ low level compliance or an extra alternative to preserve the competitive advantages of a few multinational market leaders.¹¹

Some researchers on *cluster development* have demonstrated that this might be a mechanism to generate linkages between responsible business practices and regional sustainability. Thus, cluster arrangements may be an alternative to scale up corporate responsibility from micro to macro level.¹²

Nevertheless, discussions about *Corporate Responsibility Clusters* (CRC) have been normally limited to regions where there is already an industrial structure. This investigation proposes the potential of CRC to be verified in a non-industrialised region, more specifically, in a rainforest region.

In order to investigate the chances of cluster development in a rainforest area, a case study was developed. A set of organisations were chosen to provide information about the theme autoparts made of natural fibers coming from Pará, Amazon region, in Brazil.

The investigation was divided into five chapters. These are: 1) Discussion of the Investigation Problem; 2) Literature Review; 3) Case Study Description and Pilot Interview, 4) Results of Questionnaires and Analysis, 5) Final Results and Conclusions.

⁹ Cp. Swift, T. and Zadek, S. (2002).

¹⁰ Cp. Beyond Voluntarism (2002).

¹¹ Cp. Swift, T. and Zadek, S. (2002).

¹² Cp. *ibid*.

1 Investigation Problem

This chapter presents the investigation problem (1.1), the research motivation (1.2), and the methodology (1.3).

1.1 Problem

A considerable amount of researches have discussed the phenomenon of clusters and its impacts on regional economy. Clusters or industrial districts are mostly defined as a geographic concentration of interconnected organisations in a given sector.¹³ This set of organisations may include companies, suppliers, universities, and research centres, which strategically co-operate. These interconnections lead to a higher level of innovation and productivity growth.¹⁴ Typical examples of cluster agglomeration are the Silicon Valley in the USA and the automotive industry in Germany.¹⁵

Scholars approach the phenomenon of cluster by addressing different issues. Studies have analysed, among other questions: preconditions for the emergence of a network (e.g.: a critical mass of small and medium sized enterprises in a predetermined geographical area, strong co-operative relations among member companies as well as firms and universities/research centres),¹⁶ and common problems that might affect co-operative arrangements (e.g.: co-ordination, size, hierarchy, timing).¹⁷

These analyses are important to understand the cluster dynamics. They help to identify how a cluster evolves, factors that can guarantee its continuous development and the long-term competitiveness of sectors and regions.¹⁸ Recent investigations have also pointed out that the phenomenon of clusters may be a suitable alternative to answer the question of sustainable development.¹⁹

¹³ Cp. Porter, M. (1990).

¹⁴ Cp. Van der Meer, A. (2003).

¹⁵ Cp. Porter, M. (1990).

¹⁶ Cp. Meyer, S. (2001).

¹⁷ Cp. Kriwald, T. and Schuth, S. (1999).

¹⁸ Cp. Elsner, W. (1999), p. 61-75.

¹⁹ Cp. Swift, T. and Zadek, S. (2002).

The authors have demonstrated that the clusters arrangements can give room to co-operation and dialogue among the different parts interested or stakeholders (e.g.: firms, suppliers, workers, customers) and to partnerships between the public and private sectors.²⁰ In addition, some scholars have mentioned that interactions may be an appropriate alternative to make linkages between economic and ecological aspects of business and regional development.²¹

There are several investigations, especially those carried out by German researchers, exploring the connections between clusters and environmental management.²² They have demonstrated that a set of organisations can efficiently address common issues, such as the use of raw material, logistics and waste management,²³ as well as material recycling, emissions and toxicity reduction.²⁴ Another group of researchers, from the *Copenhagen Centre in Denmark and Accountability* in England, have approached the phenomenon of cluster by focusing on corporate social management. These arrangements have been defined as *Corporate Responsibility Clusters (CRC)*.²⁵

The study of *Corporate Responsibility Clusters* explored a series of cases, which included, for example, South African wine growers and Vietnamese footwear industry, where some organisations clustered together (e.g. firms, labour unions, local governments) to keep and enhance international competitiveness.²⁶ In both cases, partnerships aimed at improving labour standards throughout the supply chain to respond to customers' demands in Europe.

Therefore, the organisations networking sounds like a possible alternative to promote interactions and to scale up responsible business practices and competitiveness of industrialised areas located in central economies,²⁷ as well as in emerging markets.²⁸ Nevertheless, these investigations mostly focus on

²⁰ Cp. Haasis, H.-D. (2000).

²¹ Cp. Biesecker, A.; Elsner, W.; Grenzdörffer, K. (Hrsg.), (1998).

²² Cp. Meyer, S. (2001).

²³ Cp. Haasis H.-D. (2004), p. 105-118 and (1999), p. 253-277.

²⁴ Cp. Hülsmann, M.; Müller-Christ, G.; Haasis, H.-D. (Hrsg.), (2004).

²⁵ Cp. Zadek, S.; Sabapathy, J.; Dossing, H.; Swift, T. (2002 and 2003).

²⁶ Cp. *ibid.*

²⁷ Cp. Biesecker, A.; Elsner, W.; Grenzdörffer, K. (Hrsg.), (1998).

²⁸ Cp. Marques, A. R. (2002).

regions where there is already an industrial structure. The discussions do not address non-industrialised regions, such as those ones covered by rainforest.

In these regions, it is not expected that an industrial district will emerge; however, rainforest regions do have a business dynamic.²⁹ This is mostly based on business activities (e.g.: mineral extraction and logging) whose financial return is limited to a small group of companies and landowners.³⁰ These activities result in continuous impoverishment of local communities and forest destruction.

Corporate Responsibility Clusters might be an appropriate response to social, economic and ecological problems of rainforest regions. Therefore, it would be important to identify from which sectors they are most likely to emerge. Once a sector and a business opportunity are identified, a crucial issue is the detection of the key-factors which could drive to co-operation and partnerships among the different organisations interested. This information is important to map out the potential for clusters. Within this context, **this investigation aims at identifying key-factors which can exert an influence on grouping of organisations or future CRC arrangements in a rainforest region.**

1.2 Motivation

There is still a critical gap in the field of Corporate Social Responsibility (up here abbreviated as *CSR*), especially when it refers to partnerships between companies, local communities and researcher centres. There are few investments in social issues because business leaders still have a tendency to see them as having little relevance to competing.³¹ Normally the social responsibility question is either related to corporate philanthropy or left to managers to be addressed as matters of individual conscience.

²⁹ Cp. Leach, M. and Fairhead, J. (2002).

³⁰ Cp. Rogge, J. (2003), p. 17-22.

³¹ Cp. Porter, M. (2002), p. 5.

This missing link between CSR and competitiveness is the main reason for the lack of investments. Therefore, investigations in this field would be important to both theory and practices in Business Administration.

Currently, most of the investigations in CSR concentrate either on direct effects of responsible management of worker's motivation, productivity, and new consumer's demands or on the impacts on environment or local communities. Investigations discussing connections between social responsibility and possible benefits to regional competitiveness have hardly ever been carried out.³²

Competitiveness of companies and regions is deeply linked to their innovation capacity.³³ Innovative corporations can find possibilities for creating new business opportunities in non-industrialised regions, within a social and environmental responsible perspective. It means that a firm can start working in partnership with different social actors, such as sectorial associations or universities, in order to develop alternative products for either the local or international market.³⁴ This can enhance economic capacity and human skills, while it helps reduce unfairness and preserve the environment.³⁵ This sort of enhancements is quite demanding in rainforest regions.

1.3 Methodology

In order to reach its aim, this research has searched for an answer to the following question: which are the key-factors that can exert an influence on grouping of organisations or future Corporate Responsibility Cluster arrangements in a rainforest region?

This investigation was carried out through a qualitative method, or case study. The scientific method has been normally used to contextualise and deepen an investigation problem, particularly to analyse a contemporaneous phenomenon, helping build theories for its better comprehension.³⁶

³² Cp. Zadek, S.; Sabapathy, J.; Dossing, H.; Swift, T. (2002 and 2003).

³³ Cp. Porter, M. (1990).

³⁴ Cp. UNEP (2002) a, b, c, d.

³⁵ Cp. Baue, W. (2002).

³⁶ Cp. Lazzarini, S. G. (1995).

As it has been pointed out by the investigations into the cluster phenomenon, the industry as well as the geographic region are important aspects to be considered. Thus, this investigation has focused on the Brazilian Amazonian region (Annexes 1 and 2) and automotive industry.

Amazon was chosen because some examples of economic sectors with *sustainable oriented business* initiatives can already be found in this rainforest region (e.g.: fishery, agri-business, automobile, tourism).³⁷ Reports have showed that, among these sectors, the automotive one has been investing a lot in research and development activities to find out industrial applications to rainforest fibers.³⁸ The case of *autoparts made of natural fibers coming from Pará State in Amazon* has been approached in this investigation.

In order to answer the investigated question, firstly, a literature review was carried out so as to provide both an overview about Corporate Social Responsibility and Corporate Responsibility Clusters and a description of the researched industry and region. Some elements that might influence grouping of organisations in a rainforest region (Chapter 2) have been identified.

Secondly, information is provided to characterise important aspects of a co-operative project between the Federal University of Belém do Pará and an international automaker, which started manufacturing autoparts made of Amazonian fibers in Brazil in the nineties. The results of an interview carried out with the automaker in São Bernardo, Brazil, in November 2002, are also presented. This interview aimed at identifying *how part of the life cycle - from fiber plantation to vehicle assemblage - works and possible problems associated with the use of natural fibers in autoparts*. Based on theory and findings obtained from the interview and observation of secondary documents, some hypothetical driving forces have been formulated (Chapter 3).

Thirdly, a questionnaire was organised and sent to a group of identified actors. The findings are here presented and analysed. The analysis aimed at identifying the key-factors that could drive to cluster arrangements (Chapter 4).

³⁷ Cp. Fundep Notícias (2004).

³⁸ Information based on Meister, S. (2001), p. 50-58 and Abraham, O. (2004), p. 74-77.

Finally, a critical comparison between theory and empirical findings was made, so that the answer to the problem could be provided. The research limitations and suggestions to further investigations are also presented (Chapter 5). A schedule (Figure 1) showing the stages of the investigation is presented below:

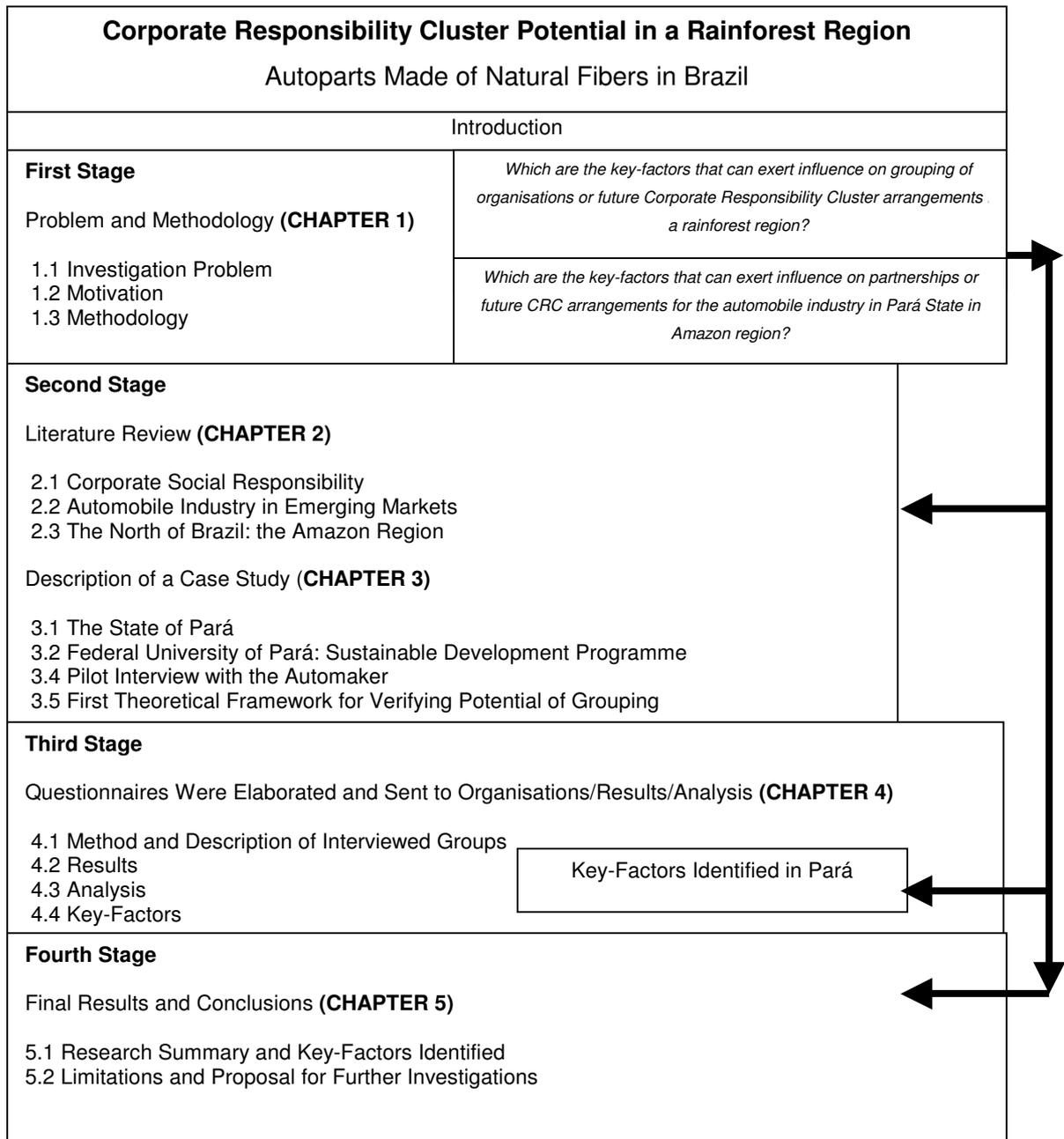


Figure 1: Stages of the Investigation

2 Literature Review

In order to start identifying factors that can influence the development of a Cluster of Corporate Responsibility in a rainforest region - having the case of autoparts made of natural materials in Brazil as an example - the literature review focused on the following issues: a) the main theme investigated: corporate social responsibility and cluster arrangements; b) sector: automobile industry; c) region: Amazon.

2.1 Corporate Social Responsibility: an Overview

The world economic output has more than doubled in the last 25 years. This means that the global wealth is rising. Nevertheless, the income disparity grows wider and the absolute number of people living in poverty is extremely high. The world is 78 percent poor (with an average purchasing power parity income lower than US\$ 3,470 annually), 11 percent middle-income, and 11 percent rich (with an average purchasing power parity income higher than US\$ 8,000 annually).³⁹ Low and middle-income countries often lack resources to eliminate problems, such as rapid population growth, inadequate education, and high rates of malnutrition and poor health, corruption and political instability and destruction of natural resources.⁴⁰

The global economy and stability depend on natural and human resources as well as on social development and, within a long-run perspective, business cannot remain healthy and viable in a deteriorating society.⁴¹ Therefore, social and environmental concerns and the success of the developing world are of fundamental strategic importance to corporations.⁴²

These concerns have been pushing companies to include the theme Corporate Social Responsibility (CSR) in their agendas⁴³ and public reports.⁴⁴ The theme

³⁹ Cp. UNEP (2002), a, b, c, d.

⁴⁰ Cp. Utting, P. (2000).

⁴¹ Cp. Buchholz, R. A. (1998).

⁴² Cp. Porter, M. (2002), p. 5.

⁴³ Cp. Pereira, C (2002).

⁴⁴ Cp. Wheeler, D. and Elkington, J. (2002).

brings the discussion about the conflict between economic and ethical interests to the arena.⁴⁵

The neo-classical economic approach advocates that the social responsibility of corporations is to attend to the wants of shareholders or investors. The classical idea is that the main objective of a company is to maximise profits. Once the investment of capital is related to risks, they are to be avoided. Therefore, expectations and duties, such as interests, payment of salaries and supply of services have to be guaranteed through a formal contract. In case the profits are reached, the shareholders are motivated to take more risks, which keep business going further.⁴⁶

Nevertheless, companies do not depend only on the interests of shareholders.⁴⁷ These are one of the main actors interested, which make part of a bigger group, the so-called *stakeholders*.⁴⁸ These are the actors which can either actively influence the company's leadership actions or passively face the impacts caused by the company's activities. The stakeholders are, for example, customers, workers, shareholders, suppliers, competitors, labour union leaders, financial investors, groups for consumer's rights, political parties, local, regional or international authorities and associations, the neighbours or local community.⁴⁹

Every stakeholder has different requirements and expectations, and companies must be attentive not only to the financial results, but also to the social and environmental impacts of their activities.⁵⁰ Some rights of stakeholders are already protected and guaranteed through legal regulations, such as worker's and consumer's rights and environmental protection laws.⁵¹ Some other demands, however, depend either on the negotiations between the corporation and parts interested, such as trade unions, or on the company's voluntary initiative or engagement.⁵²

⁴⁵ Cp. Leisinger, K. (1997).

⁴⁶ Cp. Rutsche, T. (2002).

⁴⁷ Cp. Utting, P. (2000).

⁴⁸ Cp. Wieland, J. (2002).

⁴⁹ Cp. Muchene, C. (2002).

⁵⁰ Cp. Steinmman, H. and Löhr, A. (Hrsg.), (1991).

⁵¹ Cp. Lourenço, A. and Schroder, D. (2002).

⁵² Cp. Dierkes, M. and Zimmermann, K. (Hrsg.), (1991).

The stakeholders' requirements and needs are also related to the risk management issue.⁵³ Important topics, such as worker's motivation, consumer's satisfaction and company's good reputation, have direct influence on productivity and quality, buying and investment decisions, respectively.⁵⁴ Thus, considering the interest of stakeholders, the main question to be raised by any management is not *what is the maximum profit the business can yield?* but *what is the minimum profitability needed to cover future business risks?*⁵⁵

As mentioned before, contracts or regulations guarantee most of the basic stakeholders demands. Nevertheless, companies are expected to take some measures to address other important issues; only *compliance* is not enough. Therefore, there is an international political debate concerning the main issues that should guide a pro-active corporate social strategy. The core issues of corporate social responsibility are:⁵⁶

- **Transparency and Stakeholder Dialogue** – refer to the company's principles, values and practices, as well as the way they are transmitted to and monitored by the groups interested (stakeholders). These values can be formally expressed by formal documents, such as a code of conduct or an ethical code. This issue also refers to the company's commitment to continuously improve its communication channels and the dialogue with stakeholders. This commitment to a higher social and environmental performance should be reported through a social balance or sustainability report.
- **Human Rights** – are based on the recognition of the inherent dignity and the equal and inalienable rights, which every individual is entitled to enjoy and have protected. They are defined in the *Universal Declaration of Human Rights*, adopted by the United Nations in 1948.

⁵³ Cp. Müller, H.; Rust, H.; Schmitt, J., (2002), p. 138-148.

⁵⁴ Cp. Hawley, H. (2002).

⁵⁵ Cp. Rutsche, T. (2002).

⁵⁶ Information based on Ethos Indicators (2002); Green Paper (2001); and the World Business Council for Sustainable Development Report/WBCSD (2002).

- **Worker's Rights** – are embodied in the *International Labour Organisation's Declaration on the Fundamental Principles and Rights at Work*. They include: freedom of association and the right to collective bargaining; elimination of all forms of forced and compulsory labour; abolition of all child labour; and the elimination of discrimination concerning employment and occupation.
- **Supply Relations** – refer to the social responsibility that companies, especially the large ones, have with the whole supply chain, bearing in mind that their performance can be positively or negatively affected by and influence actions of either direct or indirect suppliers.
- **Ethical Trade** - aims at ensuring that conditions within mainstream production chains meet basic minimum standards and eradicating the most exploitative forms of labour, such as child and forced labour.
- **Fair Trade** - is a trading partnership that promotes a sustainable development for excluded and disadvantaged producers. It seeks to do this by providing better trading conditions, awareness raising and campaigning. The criteria for Fair Trade marked products differ between products, but they cover issues such as guaranteed prices, pre-payment and direct payment to grower or their co-operatives.
- **Community Involvement** – covers a broad range of activities. These refer to community assistance programs, such as: supporting educational needs; ensuring community health and safety; enabling employees to do voluntary work in the community, as well as philanthropic giving and sponsorship.
- **Environmental Protection and Global Environment Concerns** – refer to the obligation that companies have to protect the environment from the impact of their operations and their broad responsibility throughout their supply chains. They should commit to continuous improvement in eco-efficiency (doing more with less).

The debate resulted in a large number of initiatives, such as agreements, guidelines, conventions, standards and declarations that apply to corporate behaviour and social accounting, reporting and auditing. These initiatives have different approaches and orientations and can be classified according to process, performance, foundation and certifications.⁵⁷ Among them, there are nine⁵⁸ which merit attention because they have been guiding a significant proportion of the world's corporations:

1. **OECD Guidance for Multinational Enterprises** - the Guidelines were established in 1976 by the *Organisation for Economic Co-operation and Development*, a club of 30 member countries in which governments discuss, develop and perfect economic and social policy. Thirty-four governments have signed up to the Guidelines, what gives them a critical mass for global application. They cover topics such as competition, financing, taxation, as well as industrial relations and environment, science and technology, being more comprehensive than the other eight initiatives. In 2000, the Guidelines were revised in order to focus on sustainable development. One interesting characteristic is that they use local practice rather than internationally agreed standards as a norm. For example, they encourage companies to observe the right to unionise and adopt terms and conditions of work, which are *not less favourable than those observed by comparable employers in the host country*. Like the Global Compact, they seek to promote development by fostering local capacity, training and other forms of human capital expansion.

2. **ILO Conventions on Workplace Practice** – *the International Labour Organisation* is the oldest UN agency and unique in comparison with other international organisations: its tri-partite decision making, with representatives of governments, labour organisations and employers' organisations. This characteristic enhances the credibility of the ILO

⁵⁷ **Process standards** define the procedures a company should put in place, e.g., how to communicate with stakeholders or how to develop management systems; **Performance standards** define what a company should do or not do, such as pay a living wage or prevent discrimination; **Foundation standards** seek to lay the foundation for a new field, describing what the best practice in an emerging area is; **Certification standards** establish a system under which certificates of compliance are awarded to companies that comply and have passed an independent third-party audit. (Cp. McIntosh, M.; Thomas R.; Leipziger, D.; Coleman, G., 2002).

⁵⁸ For a summarised schedule of the 9 main international CSR documents, see annex 3.

and its conventions; however, the decision-making can be sometimes a lengthy and difficult process. One of the weaknesses of the ILO Conventions is the lack of implementation and enforcement, even among those governments that have formally ratified them as part of their national law. The core labour standards defined by ILO include: freedom of association (Convention 87); right to collective bargaining (Convention 98); prohibition against forced labour (Convention 29 and 105); minimum wage (Convention 138); freedom from discrimination (Convention 111); right to equal pay for equal work (Convention 110). Other topics, such as health and safety, employment of disabled people, child labour and home working are also covered. In 1998, the ILO issued the *Declaration on Fundamental Principles and Rights at Work* as an attempt to address the challenges of globalisation and business social features.

3. **UN Global Compact** – it is an initiative of the UN General-Secretary Kofi Annan and seeks to align business to help strengthen *capitalism with a human face*. It includes *nine basic principles on environment, labour and human rights*. The Compact is the first initiative coming from a substantive global institution. The other initiatives are mostly sectorial ones, having originated from think-tanks or consortia of trade unions and NGOs. The nine principles of the Global Compact are drawn from the Universal Declaration of Human Rights, the ILO's Fundamental Principles on Rights at Work, and the Rio Principles on Environment and Development. In order to comply with the Compact, companies must commit themselves to three actions: **a)** to advocate the Compact and its nine principles in mission statements, annual reports and similar public venues, on the premise that their doing so will raise the level of attention paid to, and the responsibility for, these concerns within firms; **b)** to post on the GC website, at least once a year, concrete steps they have taken to act on any or all of the nine principles, discussing both positive and negative lessons learned – and triggering, thereby, a structured dialogue among the various participants about what deserves to be labelled as good practice; **c)** to join the UN in partnership projects to benefit developing countries,

particularly the least developed, the ones the forces of globalisation have largely kept apart.

4. **Global Reporting Initiative (GRI)** – it was conceived in 1997 by the Boston-based Coalition for Environmentally Responsible Economics (CERES), in collaboration with the Tellus Institute. It aims at elevating sustainability reporting to a level equivalent to financial reporting through the development of a generally accepted reporting framework. Over the past five years, the GRI has evolved into a set of reporting criteria on all aspects of a company's performance. The initial draft was released in June 2000, after being *field tested* by over 20 companies in 1999. A revised version was published in 2002. The UN Environment Programme has adopted the GRI and, like other initiatives, its development has taken place through a new social partnership between non-state actors, such as business, NGOs and accountancy organisations. The GRI framework aims to assist investors, governments, companies and a wider public to clearly understand the progress towards sustainability. The use of a common framework is seen as a way to improve related analysis and decision-making. For example, the guidelines suggest that an approach for reporting on energy could include: the measurement (in joules) of total energy usage; a broad indication of the types (e.g. primary sources) and uses of that energy, initiatives taken towards renewable energy sources and energy efficiency. The guideline assists in the format and content of reports, as well as in information on how to normalise and verify data.

5. **ISO 14000** – it was launched in 1996 by the *International Standardisation Organisation* as an industry standard which provides a framework for the management of the environmental issues. The standard focuses on organisational processes, not necessarily on their products or environmental impacts. It describes how a firm manages and continually improves the environmental aspects of its operation. The 14000 series covers five key elements: an environmental policy; an assessment of environmental aspects; an

assessment of legal and voluntary obligations; a management system; a series of periodic internal audits and reports to management. A significant contribution has come from initiatives such as ISO 14001 because this tool provided a framework to allow organisations to systematically address environmental issues. Particularly, a focus on management and process gives companies the chance to develop an internal *competency to deliver* in anticipation of future legislative change and stakeholder demands. One of the problems with ISO 14001 is that it is easier for large companies to adopt it than for small and medium-sized companies. The greatest strength of ISO is the development of management systems and areas, such as training, which allows the standards to be embedded within the company. Its greatest weakness is the exclusion of performance standards. It is possible, for example, that a company with an ISO 14001 certificate has an excellent management system in place while maintaining deplorable environmental conditions.

6. **Accountability 1000S (AA 1000S)** – it was launched in 1999 by the Institute of Social and Ethical Accountability (AccountAbility). This is a non-for-profit-professional membership organisation, built through a coalition of businesses, non-government organisations, business schools and service providers. The focus of AA 1000S is on the social dimensions of an organisation's accountability. The standards comprise both the principles of a quality standards and a set of process standards that cover five stages: planning; accounting; auditing and reporting; embedding; stakeholder engagement. AA 1000S makes references to and builds on previous quality-inspired initiatives, such as ISO 9001⁵⁹ and ISO 14001. The innovation brought by AA 1000S comes from the initiative's explicit support for *organisational learning alongside performance improvement*. A system which focuses expressly on creating conditions for learning and professional development can probably better contribute to these aims. Another

⁵⁹ A series of norms proposed by the International Standardisation Organisation. They refer to the quality of products and processes (Cp. McIntosh, M.; Thomas R.; Leipziger, D.; Coleman, G., 2002).

characteristic is the focus on the improvement of methods for communicating with stakeholders.

7. **Social Accountability 8000 (SA8000)** – it was developed by the New York-based ‘Social Accountability International’, with support of non-governmental organisations, trade unions and companies. It is the first auditable standard on working conditions. The majority of companies adopting SA 8000 are in the clothing manufacturing, toy and shoe sectors. The interest in the SA 8000 is greater in industries where there are well-known brands which need protection, and it is growing in the agricultural and electronics sectors. SA 8000 draws on the *Conventions of the International Labour Organisation* and other *UN documents* as well as on the *management systems of the ISO*. The main question asked by that SA is: *how can I ensure that my company and/or supply chain are/is respecting the worker’s rights?* One of the strengths of SA 8000 is that it is auditable. However, the criticism is that, like ISO standards, it is easier for large companies to adopt SA 8000 than for small and medium-sized companies.

8. **Global Sullivan Principles** – they are intended to promote social responsibility. Like in the Global Compact, companies (and cities, e.g., Atlanta, Columbus, and Detroit) sign up to the principles and then report annually on their progress. These principles were preceded by an initiative of Reverend Sullivan, who developed the *Sullivan Principles for South Africa*, which were significant in helping support moves by South Africans to dismantle the *apartheid*⁶⁰ regime. As *principles*, they are not auditable standards with management systems. They do not include the right of freedom of association, a core labour standard, and, thus, do not have the full support of labour organisations. The majority of the signing companies on the GSP are American.

⁶⁰ Apartheid - an Afrikaans word meaning *separation* or literally *aparthood* (or *apartness*). In English, it has come to mean any legally sanctioned system of ethnic segregation, such as the one existing in South Africa between 1948 and 1990 (Cp. Wikipedia, 2004).

9. **Green Paper** - it was launched in 2001 as an *European Framework for Corporate Social Responsibility*. The framework is based on the *European Convention on Human Rights* and the *2000 EU Lisbon Declaration*. The main objective is to build a knowledge society for all. This challenge of marrying social cohesion to an economic model based on knowledge capital requires a re-evaluation of the relationship between business and society. The main strength of Green Paper is that it brings common principles for guiding European companies to take social responsibility. However, some groups like NGOs, due to its *voluntary* approach, have criticised it.

For policy makers and civil society, a very important topic in the discussion about international standards and guidelines refers to the way multinationals behave towards their workers, customers, suppliers and local communities in emerging markets. In countries like Brazil, the most applied international CSR documents by multinational companies are the *Environmental Management System (ISO 14000)* and *UN-Global Compact*, which observes the *International Labour Organisation Convention*.⁶¹

For business strategists, a crucial discussion refers to the possibilities of linking responsible trading practices to economic results. Therefore, innovative corporations are interested in implementing social responsibility strategically motivated by reasons such as:⁶²

- attracting and retaining skilled workers (human capital);
- continuous improvements in process and logistics;
- higher productivity;
- higher quality of products and services;
- reduction or elimination of waste treatment costs;
- higher customer satisfaction;
- efficient use of natural resources and raw material;
- lower emissions, toxicity and potential related risks;
- attracting investors;

⁶¹ Based on ANFAVEA (2003) and Ethos (2002).

⁶² Based on Sustainability, Ethos, IFC (2001).

- protecting the long-term-licence to operate;
- better image.

With a long-term strategy, firms can reduce risks and increase their competitive advantages.⁶³ In such a case, the company's *social commitment* is directly related to its possibilities to succeed in the market. However, some managers interpret *responsible behaviour* only as *cost factor*, and the social practices are mostly limited to compliance or voluntary initiatives without an approach to relate them to direct returns to the firm.⁶⁴

In short, it can be affirmed that regulations, international initiatives or strategic interests led to improved ecological and social performances. Nevertheless, the company's positive actions and impacts are mostly restricted to the firm's spectrum and its direct neighbourhood.

However, there are missing links between company's responsible actions, direct economic returns and possible answers to the growing social and environmental problems in underdeveloped regions. Strategic private and public partnerships look like an appropriate answer to the problem, once social and economic integrated policies play a crucial role in modern competition. Therefore, it is very important for business people and police makers, especially those acting in emerging markets, to identify risks and capitalise on the opportunity to guarantee appropriate linkages between social responsibility and long-term oriented competitiveness.

2.1.1 Corporate Social Responsibility and Competitiveness of Emerging Markets

Ethical behaviour and tomorrow's market issues have risen dramatically during the 1990s due to the growing concerns about the globalisation and trade liberalisation and their social and environmental consequences.⁶⁵ Contrary to

⁶³ Cp. Hülsmann, M.; Müller-Christ, G.; Haasis, H.-D. (Hrsg), (2004).

⁶⁴ Cp. Buchholz, R. A. (1998).

⁶⁵ Cp. Brouwer, K. and Brinkmann, M. (2003).

some expectations, such concerns are frequently greater in emerging markets than in developed countries.⁶⁶

In new industrialised economies, businesses face growing risks and opportunities. The risks result from increasing public apprehension about sustainability related issues, such as the growing world population, the greater stress over environmental resources, the new health and security risks, as well as equity and access to resources, technology and markets.⁶⁷

Some of the most significant opportunities which can foster a sustainable approach to business in these emerging markets, according to experts, are:⁶⁸

- **Costs Saving by Treating Employees Well and Minimising Environmental Impacts** – worker’s motivation leads to higher productivity and eco-efficiency, and companies benefit from improved revenues and market access.
- **Increasing Revenues by Improving the Environment and Benefiting the Local Economy** – both the innovation and development of new products, as well as viewing *wastes* as potentially saleable products have been successful approaches. Improved processes can also make existing products more attractive to concerned customers. Recognition as a responsible producer can also open the doors to some markets in developed countries.
- **Risk Reduction through Engagement with Stakeholders** – understanding the concerns and interests of employees, customers, NGOs, politicians and business partners helps a company manage environmental and social expectations better and reduce potential financial, reputation and political risks. This improves the access to capital and insurance, saves costs and reduces the vulnerability to regulatory changes.

⁶⁶ Based on Sustainability, Instituto Ethos, IFC (2001).

⁶⁷ Cp. *ibid.*

⁶⁸ Cp. *ibid.*

- **Reputation Building by Increasing Environmental and Social Performance** – brand value and company’s reputation helps build on sales, attract capital and business partners, and recruit and retain workers. In emerging markets where the brands tend to be fairly weak, the brand owner’s reputation can be a significant competitive factor. There are many components of reputation, but sustainability is an increasingly significant factor to governments, NGOs, customers and investors.
- **Human Capital Development through Better Human Resource Management** – this is related to workers’ knowledge, skills, motivation, health and empowerment. A qualified workforce is critical to key aspects of competitiveness, such as productivity, product quality and innovation. An unhealthy workforce can lead to increased absenteeism, loss of trained employees and high costs of replacement and training.
- **Improved Access to Capital through Better Governance** – demonstrating that governance structures and management systems are designed to encourage attention to sustainability issues can help companies raise capital at attractive rates. Access to capital is critical to any company wanting to invest and grow, and it may be a serious constraint in emerging markets, where equity is typically in short supply, and debt can be expensive and difficult to obtain, except on a short-term basis.

In case private and public sectors in emerging markets cannot identify these opportunities, corporate social responsibility will mostly benefit larger international corporations. This disadvantage might come about if CR practices give multinationals a competitive edge by lowering their costs of capital, consolidating their branches, reputation and position in the marketplace. Meanwhile, to small and medium-sized enterprises (SMEs), CR will mean *costs of business or trade barriers to global markets*.⁶⁹

⁶⁹ Cp. Zadek, S.; Sabapathy, J.; Dossing, H.; Swift, T. (2002 and 2003).

Thus, public policies and business strategies have to be attentive to the possibilities of scaling up CR and benefit SMEs and local economies. Authors who investigate into cluster issue have discussed these chances.

2.1.2 Corporate Responsibility Clusters and Regional Competitiveness

The conception of *competitive clusters* elaborated by Porter (1990) affirmed that companies can gain competitive advantage, where the determining conditions of their physical location provide them with better staff, suppliers, infrastructure, insights, information and irritants than their competitors. These clusters are spontaneous outgrowths that emerge because of the fulfilment of some determined conditions, such as strong local peers competition, discernible and sophisticated local demands and local capacities, which support the continuous innovation of products and services.⁷⁰

Researchers on regional development are increasingly concerned with clusters and their positive effects on sectors and local economies. Therefore, some studies have explored how strategic networked companies can enhance their efficiency considering aspects such as logistics and environmental management throughout the supply chain and the beneficial impacts on business and regional sustainability.⁷¹

A study carried out by The Copenhagen Centre, Denmark, and AccountAbility, England, demonstrated that the cluster phenomenon may create a virtuous cycle between corporate responsibility and national, regional and local competitiveness. The authors elaborated the concept of *Corporate Responsibility Cluster* as an alternative to scale up CR practices, which used to be restricted to market leaders or low-level compliance.⁷²

These sorts of clusters can create geographically specific competitive advantages within one or several sectors. They are based on the effects of

⁷⁰ Cp. Porter, M. (1990).

⁷¹ Some of these studies were presented by Elsner, W. (1999); Meyer, S. (2001); Van der Meer, A. (2003).

⁷² Cp. Swift, T. and Zadek, S. (2002).

interactions between the business community, NGOs, labour organisations and wider civil society, and the public sector focused on the enhancement of corporate responsibility.⁷³

Corporate Responsibility Clusters can develop in many shapes and sizes, and go through distinctive phases. Initially, they result from confrontational relationships until stabilising through partnerships, statutory regulation and fiscal incentives. Therefore, it is possible to classify these clusters in four categories as follows:⁷⁴

- **Challenge Clusters** are characterised by confrontation relationship between their participants, which form the initial basis for the development of the competitive advantage. E.g.: The European-wide *Clean Clothes Campaign (CCC)*, although aiming at the textile and footwear sectors, has fostered a growing community of NGOs working on labour standards issues across many different sectors and contexts. Born as a direct public campaign, the CCC has spawned a generation of NGOs working not only as campaigners, but also as partners with companies in implementing codes of conduct and associated programmes.
- **Market-Making Clusters** are based on the leadership of one or more companies, which remould competitive conditions through the social or broader sustainability characteristics of its products, services or business processes. E.g.: Confrontation is the beginning, not the end of the story. After being highly criticised for irresponsible behaviour, companies like *Adidas*, *Levi Strauss* and *Nike* have taken the lead in addressing labour standards issues in their global supply chains. In doing so, they have catalysed comparable actions by other companies in their sectors.
- **Partnership Clusters** are based on formal, multi-sectorial partnerships supporting competitive advantages. E.g.: The *footwear industry*

⁷³ Cp. Zadek, S.; Sabapathy, J.; Dossing, H.; Swift, T. (2002 and 2003).

⁷⁴ Cp. *ibid.*

is one of the key export industries in Vietnam. In order to improve the local labour standards and keep attracting investments from foreign companies, it was developed a multi-stakeholder action plan, the Vietnam Business Link Initiative, involving private, state-owned and foreign owned factories. The plan was endorsed by and provided with resources from the local and international footwear industry, worker representatives, government departments, Vietnam Chamber of Commerce and Industry, the International Business Leader's Forum and Nike, Pentland and Adidas-Solomon.

- **Statutory Clusters** are characterised by competitive advantage rooted in public policy initiatives that impose statutory compliance and fiscal measures as a means of improving corporate responsibility standards and practices. E.g.: The Belgium Government's social labelling initiative, the French legislation on sustainability report, and the case of Vietnam are central to show how the Government, working with business, can best ensure compliance with appropriate legislation.

The four types of clusters described above are neither static nor distinct phenomena. Rather, they combine several or all of these forms at different stages in their development. The fundamental question for policy makers is not what sort of clusters or combinations that can be found, but which geographic areas and at what point in time are most likely to form the basis for corporate responsibility clustering. **How is it possible to know where the potential lies, and so take action to make sure that it comes about sooner rather than later?** Comparative advantage of nations or communities is normally understood as being rooted in the relative costs of things and processes to make products and services, for instance, people, funds, natural resources, etc. Corporate Responsibility Cluster is influenced by two new key factors:⁷⁵

- **The Legitimacy Effect** – where the competitiveness of products and services is affected by the purchasers' perception and valuations of

⁷⁵ Cp. Zadek, S.; Sabapathy, J.; Dossing, H.; Swift, T. (2002 and 2003).

the social and environmental impacts of particular goods' design and distribution. E.g. South African wine and Adidas sports-wears are affected by the consumer's interest in labour and environmental standards of production.

- **The Productivity Effect** – competitiveness is affected by responsible practices into the value chain. Enhanced employee motivation, more effective recruitment and retention are all observed effects of companies paying more attention to the wider interests of both existing and potential employees. Reduced costs of capital increasingly represent an opportunity for companies able to demonstrate their adequate handling of risks and opportunities associated to sustainable development.

Once the potential is identified, public policies can be designed and implemented, aiming at increasing the benefits of corporate responsibility practices. It is clear that these policies will be often specific to particular sectors, emerging clusters and their circumstances. Therefore, it is particularly important that the right kind of public policy interventions are introduced in the right kind of cluster at the right time. Policy makers should observe some points:⁷⁶

- Aligning corporate responsibility as a core determinant of international competitiveness is fundamental to realise its potential in addressing sustainable development objectives as well as localised business and social aims.
- Public policy aiming at encouraging corporate responsibility practices should be established within a competitiveness framework, in order to ensure its viability and amplification.
- Public policy should be pro-active in realistically mapping the potential for Corporate Responsibility Clusters, just as it is in experimenting in

⁷⁶ Cp. Zadek, S.; Sabapathy, J.; Dossing, H.; Swift, T. (2002 and 2003).

other pathways to achieve economic prosperity or address social and environmental objectives.

- Public policy should be sensitised to provide appropriate support to *corporate responsibility clusters*, with *how* ranging from a more facilitative approach, during their early periods, to advocacy, civil regulation, mandatory rule-making and fiscal support as they mature.
- Public policy should be pro-active in internationally promoting corporate responsibility clusters, since this is a pre-requisite for ensuring their effectiveness.

In this context, the researchers on CRC stressed that public policy aiming to realise sustainable development goals could and should focus on strengthening the links between corporate responsibility and the competitive advantage of nations. Moreover, they affirm that the *societal benefits* from changes in the role of business in society will remain limited, unless they support national economy strategies and outcomes.

Thus, the CRC theory brings some important elements to answer the questions concerning the missing link between CSR and competitiveness of firms, especially small and medium-sized enterprises (SMEs), and regions. Among these elements, the public-private partnerships play a fundamental role. While governments can develop social public policies, the private sector can more rapidly identify the market potential for products.

The concept also says that some geographical areas and industrial sectors may offer better chances for the development of responsible clusters. Non-industrialised areas covered by tropical rainforests have an urgent demand for a sustainable business model. These are regions that demand innovative business solutions, which can generate ecological, economic and social benefits. Researches to find out the potential of corporate responsibility cluster development focusing these areas are quite meaningful.

Among the sectors, the auto industry in emerging markets presents some characteristics (e.g. experiments of new organisational and social arrangements as well as products) and competencies that can drive forward sustainable business initiatives. The *automobile industry in Brazil and chances of CRC development* sounds like an interesting example to be investigated.

2.2 Automobile Industry in Emerging Markets

In the nineties, the trade liberalisation and the privatisation of public assets brought about far-reaching changes in the emerging markets.⁷⁷ Some economic sectors were specially influenced by this new scenario, among them, the auto industry.⁷⁸

In the eighties, the main discussion in the auto industry was related to the impact of the lean production⁷⁹ and the re-structuring of supplier relations in Europe and North America, mostly as an answer to the success of Japanese companies. In the nineties, however, the focus of discussion shifted towards the *globalisation of the automotive industry*⁸⁰ or the new relations between the Triad regions (Western Europe, Japan and North America) with the startling performance of the auto industry in several emerging countries, such as India, Brazil and China.⁸¹

In that decade, the automobile production and sales in the Triad regions stagnated, and growing prospects looked poor; the emerging markets, in contrast, looked increasingly attractive. The widespread introduction of economic reform packages, combined with new local governmental policies to encourage the auto industry provided better conditions for transnational auto companies.

Therefore, assemblers and component manufacturers began to make major investments in emerging markets, once they were interested in accessing

⁷⁷ Cp. Kim, L. and Nelson, R. (2000).

⁷⁸ Cp. Katz, J. (2000).

⁷⁹ *Lean Production* or Japanese Production Model has among its main objectives: *just in time delivery* – the suppliers are located near or within the assembler site – *reduced stock, zero defect, flexible production* and *technological co-operation between assembler and direct suppliers* (Cp. Madruga, K. 2000).

⁸⁰ Cp. Kim, L. and Nelson, L. (2000).

⁸¹ Cp. Humphrey, J. and Salerno, M. S. (2000).

growing markets and low-cost production sites. At the same time, local governments were expecting the motor industry investments to promote local technological capabilities as well as provide new job and income opportunities.⁸²

These direct investments led to a variety of configurations within the emerging markets. There is a group of countries that expect to develop a locally based industry and use some protective measures to restrict access to the domestic market; they are defined as Protected Autonomous Markets (PAMs). These strategies can be found in India, China and Malaysia. While these countries protected the domestic market from external competition, their approach to the ownership issue was quite distinctive. Malaysia promoted locally owned companies. In contrast, China attempted to modernise its car industry through joint ventures of Chinese car producers with transnational firms.

Chinese market attractiveness allowed the government to capture investments of foreign auto companies while regulating ownership and technology transfer. On the other hand, the Indian government largely abstained from regulating ownership in the car industry.⁸³ Between 1996 and 1999, 10 new ventures for passenger car production were established, and assemblers and component producers became almost entirely free from ownership restriction.⁸⁴

While big markets followed nationally oriented strategies, small markets opted for regional integration. This was a possibility of gaining greater scale in production and sales. Regional grouping facilitated trade within regions and with other countries outside. There are two sorts of regional integration.⁸⁵

The first one is seen as Integrated Peripheral Markets (IPMs), such as Mexico and Central Europe. The IPMs are specialised in products in which they have a comparative advantage, particularly assembly and intensive-labour manufacturing of parts and components. For example, in the 70's, Spain underwent a transition from an import substitution economy, with a protected local motor

⁸² Cp. Humphrey, J. and Oeter, A. (2000), p. 42-71.

⁸³ Cp. Madhavan, S. (2000), p. 95-121.

⁸⁴ Cp. Humphrey, J. and Salerno, M.S. (2000), p. 72-94.

⁸⁵ Cp. Freyssenet, M. and Lung, Y. (2000), p. 42-71.

industry, to a low-end vehicles producer, directed to the European market. On the other hand, Mexico has specialised in vehicles for the North American Market.⁸⁶

At the same time, the motor industry in Central Europe (The Czech Republic, Hungary and Poland) has been seen as part of a broader European-wide strategy. Central Europe attracted investments, not only to sites to produce low-end, mass-market vehicles (e.g. FIAT Seiscento in Poland), but also for the assembly of low-volume niche vehicles (e.g. Audi TT and VW Bora), engine assembly and components production.⁸⁷

Another group is the Emerging Regional Markets (ERMs). The clearest examples of that are Mercosur⁸⁸, which attracted investments to Brazil and Argentina in the nineties, and the Association of South East Asian Nations (ASEAN). The ERMs strategy might develop when the PAM strategy runs in difficulty.

The Russian motor industry, for example, might integrate with other parts of the former Soviet Union aiming at gaining scale through the division of labour and access to a broader customer base. At the same time, Turkey might form the focal point of a Middle East vehicle region. There are also concerns referring to the South Asia to offset the problems of limited market scale through a closer integration of the markets of Bangladesh, India, Pakistan and Sri Lanka.⁸⁹

The future of the internationalisation and regionalisation of production is not clear. The structuring of emerging markets and the relationship between these markets and the Triad economies include aspects such as design and sourcing. The multinational assemblers see the advantages of pursuing similar strategies at the global level. The use of *standard design* and common suppliers across markets provides cost reduction possibilities.

⁸⁶ Cp. Layan, J.-B. (2000), p. 122-148.

⁸⁷ Cp. *ibid.*

⁸⁸ Mercosur – created in 1991 through the Assunción Treaty and signed by Argentina, Brazil, Uruguay and Paraguay (Cp. ANFAVEA, 2003).

⁸⁹ Cp. Madhavan, S. (2000), p. 95-121.

The different markets and realities demand adaptations and attention to local customer satisfaction, once the cars should be suitable for markets with widely differing incomes and patterns of vehicles.⁹⁰ Multinational assemblers are also opting for using *follow sources*, i.e., the same suppliers used in the home country. Such practices are widely used in countries like India and Brazil. However, there are limits to the use of follow sourcing, for example, new, small-scale operations in unfamiliar environments.⁹¹

One of the consequences of these practices was that the boost of technological capability derived from the automobile industry in host countries was probably lesser at the end of the nineties than it had been 20-30 years earlier, when the subsidiaries of transnational companies created and supported local supplier networks and local models. While process-engineering skills have increased due to higher quality requirements, design and product engineering skills may be less demanding in emerging markets.⁹²

It cannot be said that innovation does not take place in emerging markets. As a matter of fact, some developments in these markets might have influence on the future shape of the global automotive industry. Emerging markets are privileged fields for organisational and social experiments. They can play *the role of laboratories*, where some innovations can be tested out within favourable social conditions and away from the pressures, demands and publicity of the core operations, once the social security, trade-union rights and environmental regulations are often placed some degrees below in contrast with the ones found in central economies.⁹³

Organisational innovations in the emerging economies include changes in supplier-assembler responsibility. This can be seen in sites such as the VW truck plant in Brazil, VW/Skoda's plant in the Czech Republic and GM's Blues Macaw plant, also in Brazil, where the supplier is responsible for the assembly of components and systems into the vehicle on the carmaker's final assembly

⁹⁰ Cp. Humphrey, J. and Salerno, M. S. (2000), p. 72-94.

⁹¹ Cp. Salerno, M. S. (2001).

⁹² Cp. *ibid.*

⁹³ Cp. Humphrey, J. and Salerno, M. S. (2000).

line. Social innovations might include experiments in outsourcing, flexible labour allocation, labour subcontracting and flexible working hours.⁹⁴

Such changes led to questions whether new spaces could be used for social and organisational experiments, which could be further used to other plants around the world. Although the results of the experiments cannot be simply transferred to the central economies, they might exert pressure on the management, staff and workers of traditional plants. One example is related to the 1998 strike in the USA. Some of the decision-makers of GM's North American operations who had worked in GM's Brazilian plant declared that they would like to introduce the Brazilian model into the USA.⁹⁵

In addition, the automotive companies might be forced to innovate under specific circumstances of emerging markets and use this innovation more widely. An example of that can be seen in the Association of South East Asian Nations (ASEAN) region. Low volume of cars and pick-ups being assembled by Japanese producers meant that the reproduction of the Japanese system – each assembler working with its own supplier – was uneconomic. The strategy of using common suppliers throughout the ASEAN region was adopted by Toyota and Nissan.⁹⁶

As mentioned before, in the nineties, the emerging markets received a lot of direct investments from automobile assemblers and component producers. These investments in industrialising economies are due to their growing markets and their potential for production cost reduction. Furthermore, these markets offer room for social and organisational experiments.⁹⁷

Among the innovations in the auto industry, the new responsibilities to be assumed by international direct suppliers may be included. This new reality also represents a lot of challenges for the local suppliers. The Brazilian automobile sector, for example, went through a number of adaptations and changes during the nineties due to the new competitive atmosphere.

⁹⁴ Cp. Salerno, M. S. (2001).

⁹⁵ Cp. Salerno, M. S. (2001).

⁹⁶ Cp. Sugiyama, Y. and Fujimoto, T. (2000), p. 176-206.

⁹⁷ Cp. Humphrey, J. and Salerno, M. S. (2000), p. 72-94.

2.2.1 The Brazilian Automobile Industry

The automotive industry in Brazil started its activities in the twenties, with the opening of the plant *Ford Motors do Brasil* in São Paulo, in 1923, and *General Motors*, in 1925. The activities were limited to production without any local technological development of products.⁹⁸

The multinational subsidiaries were oriented to assemble cars within the *completely knocked down* system. The projects were defined in the home countries and adapted to the local structure, such as market, customer preferences, and climatic conditions, i.e., *tropicalization*.⁹⁹

In the sixties, companies like *Mercedes Benz* and *SAAB-Scania* also started their activities in Brazil to produce mainly trucks, since there was a governmental interest in giving priority to the road transport of cargo. In the seventies, two new multinational initiated their activities in Brazil. In 1973, *FIAT* opened a plant in Betim, and, in 1978, *Volvo-trucks* opened a plant in Curitiba. This represented an initiative to start vehicle production outside the São Paulo region.¹⁰⁰

In the eighties, the competitiveness standards in the Brazilian automobile industry started to change. *General Motors* increased its investments, while *Ford and Volkswagen joined to create Autolatina*.¹⁰¹ At the same time, *FIAT* started an aggressive programme to increase its market share by improving its products but keeping low prices. Thus, the assembly sector in Brazil became controlled by transnational companies.

Ownership in the components industry was more diversified. The majority of the largest components industries were foreign-owned, but some Brazilian-owned companies did occupy leading positions and were able to export to North

⁹⁸ Cp. Fleury, A. and Fleury, M. T. (1995).

⁹⁹ Cp. *ibid.*

¹⁰⁰ Cp. *Ibid.*

¹⁰¹ Autolatina – a joint venture between FORD and VW to work together in Brazil and Argentina during 1987-1995 (Cp. Horst, R., 1987).

America and Europe in the seventies and eighties.¹⁰² Table 1, below, shows the assemblers that are operating in Brazil.

Company	Plants	Products	City – State – Region
AGCO	Canoas Plant Santa Rosa Plant	Wheel Tractors, Loaders, Backhoes, Stackers Combines, Corn Platforms, Cutting Platforms, Belts, Transport Reels for Platforms	Canoas – RS – South Santa Rosa – RS – South
Agrale	Plant 1 (Agrale S.A.) Plant 2 (Agrale S.A.) Agrale Montadora Agrale Amazônia Plant 5 (Agrale S.A.)	Wheel Tractors, Engines, Components Processing Trucks, Buses International Truck Assembly Motorcycle and Scooter Assembly Fiberglass Component Manufacturing	Caxias do Sul – RS – South Caxias do Sul – RS – South Caxias do Sul – RS – South Manaus – AM – North Caxias do Sul – RS – South
Case - CNH	Curitiba Plant Contagem Plant Piracicaba Plant	Wheel Tractors, Combines (Agricultural Division) Backhoes, Loaders, Motorgraders (Construction Div.) Combines, Tillers, Transferring Equipment (Agricultural Division)	Curitiba – PR – South Contagem – MG – Southeast Piracicaba – SP – Southeast
Caterpillar	Piracicaba Plant	Crawler Tractors, Motorgraders, Wheel loaders, Loaders & Backhoes, Hydraulic Excavators, Compactors, Electricity Generators	Piracicaba – SP – Southeast
Daimler Chrysler	São Bernardo do Campo Plant Campinas Plant Juiz de Fora Plant	Trucks, Buses, Assemblages After-Sales and Part Centre Cars	São Bernardo do Campo – SP – Southeast Campinas – SP – Southeast Juiz de Fora – MG – Southeast
FIAT Allis - CNH	Contagem Plant	Crawler Tractors, Loaders & Backhoes, Motorgraders, Loaders, Hydraulic Excavators	Contagem – MG – Southeast
FIAT Automóveis	Betim Indust. Complex Plant 1 Plant 2	Cars, Light Commercials Engines	Betim – MG – Southeast
Ford	Industrial. Complex in the Northeast Industrial. Complex in São Bernardo Industrial. Complex in Taubaté	Cars Cars, Light Commercials, Trucks Parts, Engines, Transmissions	Camaçari – BA – Northeast São Bernardo do Campo – SP – Southeast Taubaté – SP – Southeast
General Motors	São Caetano do Sul Plant São José dos Campos Plant Mogi das Cruzes Plant Gravatá Plant	Cars Cars, Light Commercials, Foundry, CKD Preparation for Export, Engines and Transmissions Stamping Parts Cars	São Caetano do Sul – SP – Southeast São José dos Campos – SP – Southeast Mogi das Cruzes – SP – Southeast Gravatá – RS – South
Honda	Sumaré Plant	Cars	Sumaré – SP – Southeast
International	Caxias do Sul Plant	Trucks	Caxias do Sul – RS – South
Iveco	Industrial. Complex Sete Lagoas	Engines Light Commercials and Trucks (FIAT Automóveis) Light Commercials, Trucks and Buses (Iveco)	Sete Lagoas – MG
John Deere	Horizontalina Plant Santo Angelo Plant Cameco Plant	Wheel Tractors, Combines, Tillers, Crawler Sets, Corn Platforms, Platform Transport Vehicles Foundry Combines	Horizontalina – RS – South Santo Angelo – RS – South Catalão – GO – Middle-West
Karmann-Ghia	São Bernardo do Campo Plant	Tool Room, Devices, Stamping Sets, Bodies, Vehicle Assembly, Prototypes	São Bernardo do Campo – SP – Southeast
Komatsu	Suzano Plant	Crawler Tractors, Hydraulic Excavators, Loaders, Foundry	Suzano – SP
MMC Automotores (Mitsubishi)	Catalão Plant	Light Commercials	Catalão – GO – Middle – West
New Holland-CNH	Curitiba Plant	Wheel Tractors, Combines	Curitiba – PR – South
Nissan	Utility Plant	Light Commercials (Nissan, Renault)	São José dos Pinhais – PR – South
Peugeot Citroën	Tecnopólo Plant 1 Plant 2	Cars Engines	Porto Real – RJ – Southeast
Renault	Ayrton Senna Industrial Complex Ayrton Senna Plant Mercosul mechanical Plant Utility Plant	Cars Engines Light Commercials (Nissan, Renault)	São José dos Pinhais – PR – South
Scania	São Bernardo do Campo Plant	Trucks, Buses, Industrial and Marine Engines	São Bernardo do Campo – SP – Southeast
Toyota	São Bernardo do Campo Plant Indaiatuba Plant	Parts Cars	São Bernardo do Campo – SP – Southeast Indaiatuba – SP – Southeast
Valtra	Mogi das Cruzes Plant	Wheel Tractors	Mogi das Cruzes – SP – Southeast
Volkswagen	Anchieta Plant Taubaté Plant São Carlos Plant Resende Plant	Car, Light Commercials Cars Engines Trucks, Buses	São Bernardo do Campo – SP – Southeast Taubaté – SP – Southeast São Carlos – SP – Southeast Resende – RJ – Southeast
Volkswagen/Audi	São José dos Pinhais Plant	Cars	São José dos Pinhais – PR – South
Volvo	Curitiba Plant Pederneiras Plant	Trucks, Truck Cabines, Buses, Engines Articulated Trucks, Loaders, Motorgraders	Curitiba – PR – South Pederneiras – SP – Southeast

Table 1: Automotive Plants in Brazil¹⁰³

¹⁰² Cp. Fleury, A. and Fleury, M. T. (1995).

¹⁰³ ANFAVEA (Brazilian Association of the Automotive Industry), 2003.

Although many projects originated in the eighties, the big changes came only in the nineties. Until the eighties, the Brazilian automobile industry worked within a protected and subsidized context. In the nineties, the market was opened to the entrance of imported cars, as well as to investments by assemblers, as it is presented in Table 2 below:¹⁰⁴

Company and Product	Location and Start-Up Date	State Investment (US\$ million)	Annual Capacity (000)
Mercedes (A Class)	Juiz de Fora/Southeast (1999)	820	70
VW Audi (A 3, Gol)	S. José dos Pinhais/ Southeast (1999)	600	120
Land Rover (Defender)	São Bernardo do Campo/Southeast (1998)	150	15
Renault (Scénic, Clio II)	S. José dos Pinhais/Southeast (1999)	750	110
PSA Peugeot (206)	Porto Real (2001)	600	100
IVECO (LCVs)	Sete Lagoas (2000)	250	20
FIAT (Pick Up)	Belo Horizonte/Southeast (1999)	200	100
Toyota (Cars)	Indaiatuba (1998)	150	15
Mitsubishi (Light Vehicles)	Catalão (1998)	35	8
Honda (Cars)	Sumaré/Southeast (1997)	100	30
Chrysler (Dakota)	Campo Largo (1998)	315	12
GM (Blue Macaw)	Gravataí/South (2000)	600	120
Ford (Amazon)	Camaçari/Northeast (2001)	1300	250

Table 2: New Companies and Factories for Light Vehicles Production, Brazil, Late 90's¹⁰⁵

Adaptations and changes in the Brazilian automotive industry were necessary to respond to the new requirements of the marketplace. Among the new issues to be addressed were, for example, lean and cleaner production, higher quality and productivity, technological skills and engineering capabilities, investments in human capital, environmental quality, new capabilities to work with assemblers located in different regions, and partnership between assemblers and suppliers.¹⁰⁶

Suppliers had to offer improved competencies and lower costs. Due to the reinforcement of price competition and the fact that almost 70% of the value of a car is produced by the components industry and subcontractors, producers have turned to their suppliers in search of significant price reductions.

¹⁰⁴ Cp. Humphrey, J. and Salerno, M. S. (2000).

¹⁰⁵ Reorganised by the author based on Humphrey, J. and Salerno, M. S. (2000) and ANFAVEA (2003).

¹⁰⁶ A total of 51 companies of the automotive industry were inaugurated within the period 1996-2000. They are established in 8 States and 29 municipalities. Before the nineties, companies were basically concentrated in the State of São Paulo or in the Southeast Region (Cp. ANFAVEA, 2003).

The Brazilian automotive sector, for example, went through the *modular mania*, a trend in assembler-supplier relationship. Modularization is closely associated with attempts to commonalise platforms and standardise designs at the global level and work with the same first-tier suppliers at multiple locations world-wide. Such a strategy is referred to either as *follow design* (using the same supplier as far as possible across different markets) or *follow sourcing* (using one supplier for a particular part or system across all the markets where it is required). This means that suppliers had to take on more responsibility for design. The first-tier supplier becomes responsible not only for the assembly of parts into complete units (dashboards, brake-axle-suspension, seats, cockpit-assemblies, and so on) but also for the management of the second tier suppliers.

The modular assembly has been developed within the industrial condominium. This involves not only the physical proximity but also the development of new relationships between assembler and supplier, based on the transfer of activities to the suppliers and increased service content in the relationship. All the new middle and large-scale plants in Brazil have created industrial condominiums around them. Receiving sub-assembly instead of isolated auto parts means different logistics and costs issues.¹⁰⁷

This modular production has three aims: 1) to reduce costs, 2) to increase the efficiency of low-scale assembly, and 3) to minimise the assembler's investments requirements in new plants. The second and third aims are particularly important in emerging markets, which are characterised by limited scale and inherent market volatility.¹⁰⁸

In spite of the attempt to standardise design, there have been some barriers to that. These fall into five main categories. Firstly, minor changes are required to meet the preferences of local customers; secondly, changes arise from differences in road and usage conditions; thirdly, design adaptations may also be made due to the characteristics of local materials or because different production processes are more efficient at low volumes; fourthly, substantial

¹⁰⁷ Cp. Salerno, M. S. (2001).

¹⁰⁸ Cp. Humphrey, J. and Salerno, M. S. (2000).

changes may be required to meet local market needs (e.g. new models); and fifthly, follow design normally leads to overspecification and increased costs in relation to local rules on security, pollution, and so on.

Thus, local adaptation aims at reducing costs, which means that extensive redesign changes are made in order to keep costs down to achieve the *target price*. For example, GM, in Brazil, designed the *Blue Macaw* based on the *Corsa* platform, but with a target price twenty per cent below the Standard *Corsa*.¹⁰⁹

Before the 1990s, it was possible to see in Brazil the birth of unique models, which, somehow, can be considered as *Brazilian models* – as *Brasilia* and *Golf*, produced by Volkswagen. The company adopted the local design strategy by using old platforms. These activities led to the consolidation of some competencies in product development in the Brazilian subsidiary, not only in the local market, but also in similar ones. The design of *VW Santana* produced in China is concentrated in Brazil, as well as design activities for Mexican or Argentinean operations. Other local design experiments also took place in the late 1990s, for example, VW PQ-24, a new developed platform.¹¹⁰

If designs have to be adapted to the local market, what are the consequences for follow sourcing? If designs are unchanged, follow sourcing provides considerable advantage, because it allows for more cost effective and speedy introduction of new models. Yet, in case design changes are made and quite distinct *unique parts* are created, then advantages of the follow sourcing are lost.

Various assemblers have a fairly clear hierarchy of sourcing preferences: 1) globally preferred supplier for the parts (wholly owned or in a joint venture); 2) alternative transnational supplier or 3) locally owned company using licensed technology from one of the globally preferred suppliers.¹¹¹ The first two options are more widely preferred; this is the example of sourcing for the *Mercedes A* car in Brazil, as presented in Table 3 below:

¹⁰⁹ Cp. Humphrey, J. and Salerno, M. S. (2000).

¹¹⁰ Cp. Salerno, M. S. (2001).

¹¹¹ Cp. Humphrey, J. and Salerno, M. S. (2000).

Supplied by Company Supplying in Germany	Supplied By Other Transnational Company	Supplied by Locally Controlled Company
Engine Mounting Rear Door Assembly Wiring Harness Wheel and Tyre Assembly Windscreen/Glass Heating/Cooling System Dashboard Shock Absorbers Distributor Clutch Electrical Components Air Bags Trim Relieves ABS Sensors Rear Axles (Mercedes Truck Plant)	Seats Exhaust Dashboard Started Motor Headlights Torsion Bars Springs Plastic Parts Steering System Brakes	Petrol Tank Taillights Wheels Aluminium Wheels Plastic Parts Set Mirrors

Table 3: Mercedes A Car Sourcing in Brazil¹¹²

2.2.2 Environmental Management in the Brazilian Automobile Industry

Vehicle emissions and the steady traffic growth are the major sources of noise and air pollution.¹¹³ As the automobile production expands, it inevitably increases the burden placed on the environment.¹¹⁴

Consequently, automakers have been pressured by consumers and investors, among other groups, to improve the environmental performance of their processes and products. The manufacturers are investing in new technologies to optimise fuel consumption, reduce noise and recycle materials.¹¹⁵

In Brazil, the automotive industry had also to address environmental issues. Concerning their production, several Brazilian plants were certified by an environmental management system or ISO 14.000 in the nineties. Examples of plants that are already certified: Ford (São Bernardo, Taubaté, and São Paulo), FIAT (Betim), Honda (Manaus), Volvo (São José dos Pinhais), Scania (São Bernardo), Volkswagen (Resende, São Bernardo, and Taubaté), Mercedes (São Bernardo, Campinas, and Juiz de Fora). The first and second tiers

¹¹² Cp. Zilbovicius, M. and Arbis, G. (1997).

¹¹³ Cp. Umweltbundesamt (2001/2002).

¹¹⁴ Cp. Henning, A. (1993).

¹¹⁵ Cp. Madruga, K. (2000).

suppliers are also being much more controlled by the assemblers in terms of environmental quality.¹¹⁶

Manufacturers look for strategies to invest in *lean and clean production*, aiming at higher efficiency and costs reduction. As a result, the suppliers have also to respond to new requirements, as presented in Figure 2 below:

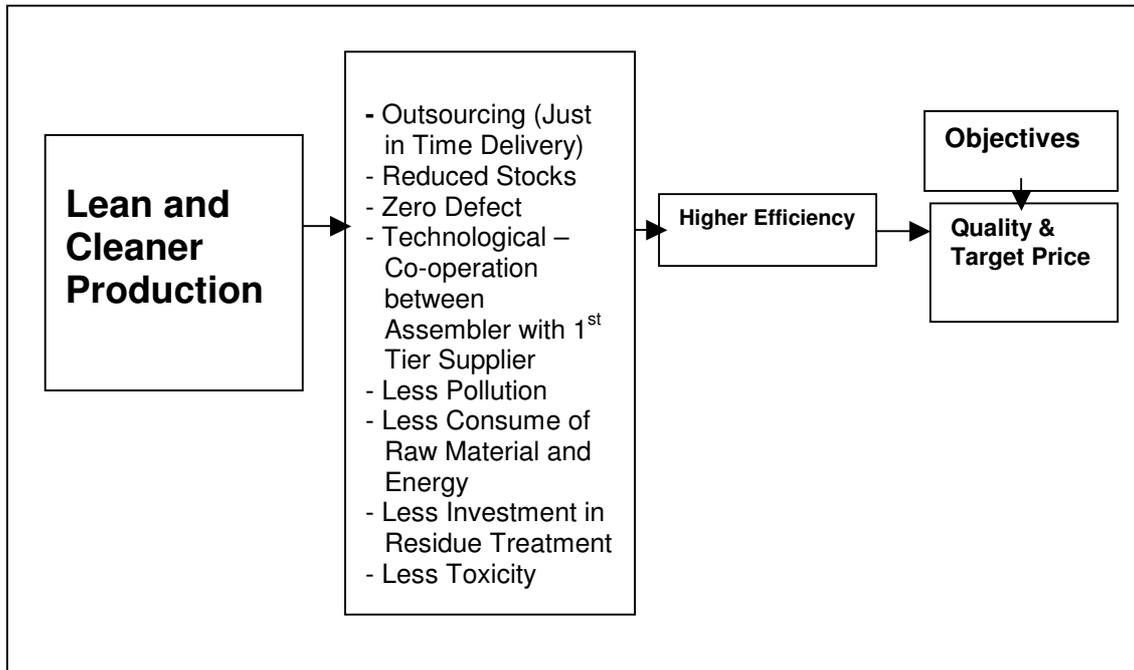


Figure 2: Requirement to Suppliers¹¹⁷

Concerning products, Brazil has been a laboratory for many experiences. In the seventies, the petrol crisis led the Brazilian government to support a scientific programme to develop a local alternative to the energetic model. Scientists from the University of Campinas (UNICAMP) developed an alcohol-powered engine.¹¹⁸ This programme subsidised by the government worked very well through the eighties. However, due to the pressure exerted by big petrol producers, the programme lost its strength.¹¹⁹ Presently, there are eight passenger models powered by a combination of alcohol and gasoline (bi-fuel motor), a technology developed by a first tier supplier.¹²⁰

¹¹⁶ Cp. ANFAVEA (2003).

¹¹⁷ Cp. Madruga, K. (2000), p. 36.

¹¹⁸ There are also researches in the country on the use of bio-mass; one possibility is the use of soybean (Biodiesel, 2004). In the city of Curitiba, Southern Brazil, buses are powered by alcohol and soybean energy (Cp. Paranaonline, 2004).

¹¹⁹ For further information about current researchers on alcohol-powered engine, see Leme, N. (2002).

¹²⁰ Cp. Stuani, R. (2005).

The country also offers potential for the use of other natural materials in components.¹²¹ In the early nineties, researchers from the University of Belém do Pará, in the Amazon region, and a multinational automaker worked together to find out how some raw materials, such as fibers, plant oils, resins, dyes and rubber, could be used in the automobile industry. A very successful example of alternative material is the coconut fiber, as mentioned below:

“Coconut fibers have been used in motor vehicles for more than sixty years – mainly in the interior trim and seat cushions. These strong fibers lend themselves to such applications as they are easy to produce and process and have an estimated service life of 90 years. Unlike plastic foam, they have good ‘breathing’ properties – a great advantage for vehicle seats in countries with hot climate like Brazil. Naturally resistant to mites and fungi, coconut fibers biodegrade with no adverse impact on the environment. Indeed, the remains of the fibers make an effective natural fertiliser.

A successful and sustainable way to use renewable resources from the rainforests of Brazil.”¹²²

Consequently, the use of natural materials adds ecological features to the product. Besides, due to their properties and availability, they can be much more suitable for tropical areas. As already mentioned, emerging markets can be a privileged field for organisational and social experiments, once the multinationals are away from pressure exerted by central markets. Moreover, the environmental and trade union rights are placed some degrees below. Nevertheless, this distance does not necessarily mean to average the environmental and social standards down; quite on the contrary, they can also average them up. Standards improvements are particularly demanding in regions covered by rainforest like Amazon.

2.3 The North of Brazil: the Amazon Region

Brazil is the fifth largest country in the world, with an area of 8,511,965 square kilometres. The country is divided in five regions (South, Southeast, Middle-West, North and Northeast). Industry and trade are mainly concentrated in the

¹²¹ Cp. Nascimento, S. (1999).

¹²² Meister, S. (2001), p. 56.

Southeast and in the South, each one representing 58,7 percent and 16,4 percent of the Brazilian GDP, respectively. The North, or Amazon region, accounts for 4.5 percent of the GDP.¹²³

The population of approximately 172 million is mostly urban, concentrating in the Atlantic coastal region; 78 percent of the Brazilian people live in cities. Brazil is the most populous country in Latin America and the fifth most populous country in the world.¹²⁴

Approximately 29 percent of the population is between 0-14 years old, 66 percent is between 15-64 years old, and only 5 percent is over 65 years old. The country is the 12th biggest economy in the world.¹²⁵ However, it shows several social inequalities, for example, the poorest fifth of Brazilians receive only 3 percent of the total income, while the richest fifth have access to more than 60 percent.¹²⁶

The unequal distribution of income and population is directly related to the social problems and environmental degradation. Therefore, it represents a risk to the economic wealth. This situation is quite alarming in the North of the country, the Amazon region. In spite of the environmental depletion, one of the largest freshwater reserves and the richest biodiversity on the planet lie in that region.¹²⁷

Northern region is formed by the States of Acre, Amapá, Amazonas, Pará, Rondônia, Roraima and Tocantins. Its total area is 3,869,637 square kilometres, which represents 45 percent of the national territory. It has a population of 12,833,383 inhabitants (8 percent of the total Brazilian population) and its demographic density is 3.31 inhabitant per km². The biggest cities are Manaus and Belém, with 1,403,796 and 1,279,861 inhabitants, respectively. The climate is equatorial and tropical, and the region is basically covered by the rain forest.¹²⁸

¹²³ GDP – Gross Domestic Product (Cp. Portal Brasil, 2003).

¹²⁴ Cp. Parks, R. and Lehman, J. (2002).

¹²⁵ Cp. Fucs, J. (2003).

¹²⁶ Cp. UNEP (2002), a.

¹²⁷ Cp. WWF (2003).

¹²⁸ Cp. Portal Brasil (2003).

Of the 7 million km² of the Amazon forest, almost 60 percent is located in the Brazilian territory. There are three kinds of Amazonian forests: the highland forests of the Andes, the dry land forests and the flooded river forests or *várzeas*. The Brazilian Amazon is formed by dry and flooded forests. The flooded forests have several species of trees of economic use, beside hardwoods. The rubber tree, *sorva*, *andiroba*, *maçaranduba*, *buriti* and *tiucum* produce rubber, food, oils, resins and fibers of economic importance. The *várzeas* are especially rich and productive.¹²⁹ It was there that large *indigenous concentrations* used to be found, and where large agricultural and cattle-raising projects have been currently developed.¹³⁰

Many of the *várzea* species are endangered due to the rapid development of urban areas, the building of dams and the mercury pollution. The non-regulated hunting and fishing in the *várzeas* threatens the existence of several large sized aquatic vertebrates. The list of endangered species includes *botos*, cow fish, Brazilian otter, real turtle, *jacaretinga* and *pirarucu*, the biggest fresh water fish in the world.¹³¹

Until the sixties, the forest remained relatively intact. Nevertheless, short-term oriented projects, such as clearing areas for cattle raising, construction of highways or huge hydroelectric power plants, combined with the poverty of the local communities, which end up depleting the natural capital for the sake of their livelihood, have led to deforestation.¹³² Moreover, only 3.2 percent of the Amazon forest is officially protected through parks and reserves, but they are badly monitored. Consequently, 15 percent of the forest have been lost over the last forty years.¹³³

Other factor that leads to the environmental destruction is the impact caused by irregular cut of trees and extraction of minerals, such as iron ore, bauxite,

¹²⁹ Cp. Rogge, J. (2003), p. 17-22.

¹³⁰ There are 206 indigenous populations in Brazil today. Most of them are small communities, the remains of bigger populations that were wiped out by disease, slavery, massacres, invasions of their territories, deportation and assimilation schemes. Today, more than two thirds of these groups amount to less than one thousand people. As a whole, there are some 280,000 Indians, counting only those living in indigenous areas. Other 30,000 are Indians who have left their villages for urban areas. The indigenous population is concentrated in *Amazônia*, where around 60% of Brazilian Indians live (Cunha, M. C., 2003).

¹³¹ Cp. Fonseca, V. I. and Por, D. F. (2002).

¹³² Cp. Rogge, J. (2003), p. 17-22.

¹³³ Cp. Nanne, K. (1997).

aluminium and manganese. The local economy is based on the extraction of these minerals and other products, such as latex, *açaí*, wood and Brazil chestnut, which are also commercially important.¹³⁴

Aiming at fostering the local economy, the Brazilian government gives incentives to the opening of factories in the Manaus region, with focus on assemblers of electronic appliances. This is a region with infrastructure problems; therefore, it is not easy to attract investments. Despite of having big water reserves and large electrical power plants, in some areas the electrical supply and water treatment are deficient. Transportation is also a problem, since the roads are in bad conditions, especially during the rain season. Inadequate public policies to reduce *transport taxes*, aiming at attracting companies to the region, have contributed towards both the access to and destruction of natural resources.¹³⁵

Thus, this is a region that presents many contradictions, as mentioned below:

“Por trás do verbete Amazônia escondem-se realidades distintas. Pessoas completamente excluídas do mercado convivem com outras que consomem tanto quanto os habitantes dos países ricos. Áreas ocupadas há séculos continuam sem infraestrutura, enquanto se propõe a abertura de novas fronteiras. Os impactos ambientais e sociais decorrentes deste modelo são enormes e tendem a aumentar. Reverter este modelo, introduzir equidade, democracia e sustentabilidade, como base para as políticas públicas na região, exige o fortalecimento da organização popular e o controle social nos processos de tomada de decisão e implementação dos projetos. Além disso, é urgente a valorização da produção sustentável e dos mercados locais, inclusive através da transformação in loco dos produtos, e a criação de mecanismos de compensação, por meio de serviços ecológicos das florestas, para financiar as iniciativas de sustentabilidade. A sustentabilidade deve ser uma proposta do Governo e da sociedade. A proteção dos ecossistemas amazônicos deve se reverter em qualidade de vida para todos os seus habitantes.”¹³⁶

¹³⁴ Cp. Portal Brasil (2003).

¹³⁵ Ninni, K.; Rogge, J.; Oliveira, P. de T. (2003), p. 23-44.

¹³⁶ Rogge, J. (2003), p. 17, Translated from Portuguese into English: Different realities are hidden behind the concept Amazon rainforest. People who are totally excluded from the market live together with others who consume as much as those who live in rich countries. Areas that have been occupied for centuries still remain without any infrastructure. At the same time, the opening of new frontiers is proposed. Social and environmental impacts result from this model and tend to increase. To reverse this model and introduce equality, democracy and sustainability

There is an urgent need of an alternative development model for Amazon – a wise way to deal with natural, social, human and economic resources. In this context, the Brazilian federal government announced the *Sustainable Amazon Programme – Programa Amazônia Sustentável (PAS)* - in May 2003. The programme has five central axes: 1) sustainable production by using advanced technology; 2) a new model of financial resources; 3) environmental management and territorial organisation; 4) social inclusion and citizenship; and 5) infrastructure development. The government is still discussing some final details, and the official document is being elaborated.¹³⁷

Other sustainable development initiatives have been discussed and supported by regional and local governments, the Bank of Amazon and Brazilian Service for supporting SMEs (SEBRAE) to promote the development of *local productive arrangements* in the region.¹³⁸ In 2002, the Bank of Amazon and the Research Institute of Applied Economics carried out a study to identify which economic sectors should be supported.¹³⁹

The study identified business activities in the Amazonian states. In each state, an activity was chosen and a pilot-project was initiated to verify the development potential of local productive arrangements. The chosen sectors were: furniture (Amapá); tourism (Maranhão and Mato Grosso), rice (Roraima), fishery (Amazonas); cattle raising (Rondônia, Acre, Pará and Tocantins). The pilot-project aimed at verifying how a *supply chain* could be developed or improved, as well as identifying difficulties and gaps and the types of technologies that would be required.¹⁴⁰ To support the technological development of SMEs and productive arrangements structure, there is an *incentive programme of SEBRAE*.¹⁴¹

as a basis for the regional public policy, it is necessary to strengthen both the popular participation and the social control concerning decision-making processes and project implementation. Moreover, value has to be urgently placed on sustainable production and local markets. This includes the local processing of products and the development of compensation mechanisms, through an ecological approach, to finance the sustainability initiatives. Sustainability must be a proposal by Government and society. The protection of the Amazon ecosystem has to revert as life quality to all its inhabitants.

¹³⁷ Cp. Agência Brasil (2003).

¹³⁸ Cp. Sebrae Notícias (2004).

¹³⁹ Cp. Fundep Notícias (2004).

¹⁴⁰ Cp. Viana, F. G. (2004).

¹⁴¹ Cp. Silva, F. A., da; Lüdke, L.; Falcão, J. F. N. (2004).

2.4 Concluding Remarks

This chapter describes both the Corporate Responsibility Cluster phenomenon and the investigated sector and region. The goal was to identify in the literature some elements and factors which might influence grouping of organisations in a rainforest region.

Most researchers have characterised CSR as the continuous commitment of companies to be attentive to shareholders' (investors) as well as stakeholders' (e.g.: customers, workers) demands. The answers to some of these requirements are mostly assured by contracts and compliance.

Innovative companies, however, are interested in dealing with CSR in a more strategic way. There is a positive relation between responsible behaviour, productivity, logistics cost reduction, worker's attraction and retention, product quality, innovation and eco-efficiency, which means benefits to the businesses.

Thus, CSR has been included in the international agenda of discussions about sustainable development and management of business enterprises. As a consequence of this debate, there have been several initiatives, agreements and standards like, for example, *United Nations Global Compact*, referring to the improvement of the company's environmental and social performances.

In spite of the connections between sustainability and business, most of the studies on social management do not mention potential initiatives or measures associated with responsible business to lead to regional sustainable development. Consequently, such studies do not deal with CSR within a macro level perspective.

A possible answer to this problem is provided by the theory of Corporate Responsibility Clusters. These sorts of arrangements are pointed out as an alternative to generate the potential linkages between responsible business practices and the macro dynamics of competitiveness and sustainable development.

Corporate Responsibility Cluster (CRC) can generate geographically specific competitive advantages, based on the co-operative efforts of companies, labour unions, sectorial associations, non-governmental organisations and governments to manage social responsible practices. This strategic co-operation can positively affect business and regional competitiveness.

These groups cluster together influenced by two key factors: *productivity* (scale, quality improvements) or *legitimacy* effect (consumer's perception). Hence, sustainable development public policies should focus on strengthening the connections between corporate responsibility and regional competitive advantages. At the same time, business should support the regional economy. Therefore, it is important to identify some characteristics of the sector and the sort of local policies that might give way to a CRC configuration. This project investigated the Brazilian automobile industry and the Amazon region.

The automobile industry in new industrialised markets attracted considerable investments from the multinational automakers in the nineties. Countries like Brazil offered growing market perspectives, local governmental incentives and reduced production costs. A total of fifty one companies of the automotive industry were inaugurated within the period 1996-2000 in the country.

The opening of new automaker plants, the entrance of transnational autoparts companies (follow sourcing) and imported cars represented new tasks and difficulties to the local industry, particularly to the local suppliers. Different from the sixties, when subsidiaries of transnational companies created and encouraged local supplier networks and development of local models, at the end of the nineties this support decreased. New experiments were tested by multinationals, but they were limited to either the organisational (e.g.: modularization) or social level (e.g.: outsourcing).

Within these new competitive circumstances, the local automobile industry had to deal with new issues, such as lean and cleaner production, higher quality, scale and productivity, process engineering skill improvements, investments in human resources and environmental quality. Thus, it also increased investments in *greening the motor industry*. These changes could be mainly

perceived in the production process (e.g. several plants certified by ISO 14000), but also in the product (bio-motors, i.e., alcohol + gasoline powered motors).

Within this context, a co-operative project between an automaker and the Federal University of Belém do Pará in Amazon was carried out to research rainforest fiber applications in automobile industry. This project was initiated within the framework of the sustainable development programme (POEMA).

The programme of Federal University of Pará and other governmental initiatives aims at fighting against poverty and promoting a social-environmental development model in Amazon. In May, 2003, the Brazilian federal government proposed the *Sustainable Amazon Programme* (Programa Amazônia Sustentável/PAS), which focuses on *sustainable production using advanced technology; a new model of financial resources; environmental management and territorial organisation; social inclusion and citizenship; and infrastructure development*. In 2002, Amazonian regional and municipal governments, the Bank of Amazon and the Brazilian service for supporting SMEs started a credit and assistance programme to support *local productive arrangements*.

The new issues to be addressed by the Brazilian automotive industry, such as *higher quality, scale and productivity* and the regional and federal programmes to promote sustainable development might work as *drivers* that can bring organisations together. These ideas will be explored in more details in the next chapters.

3 Case Study Description and Pilot Interview

The literature background provided information about the investigated region and sector. This chapter will start exploring the question: which are the key-factors that can exert influence on partnerships or future CRC arrangements for the automobile industry in Pará state in Amazon region?

This section has been divided into five parts. The first three parts describe the state of Pará, the Sustainable Development Programme of the federal university and the co-operative project between automaker and university. The fourth part presents the results of an interview carried out with the automaker in São Bernardo, Brazil, in November, 2002.

A discussion about the possible reasons that might influence strategic partnership and co-operation among companies and other groups interested in Pará is presented in the fifth part.

3.1 The State of Pará

The State of Pará occupies an area of 1,247,702.7 square kilometres. Its major cities are *Belém* (its capital), *Ananindeua*, *Santarém* and *Castanhal*. The population is of 6,192,307, i.e., it is the most populated State in the Amazon region. Most of its extension, or 73 percent of its territory, is covered by forest.¹⁴²

The lumber industry plays an important role in this area. The Amazon lumber industry represents 15 percent of the regional GIP, and Pará alone accounts for 40 percent of the wood extraction.¹⁴³ Nevertheless, the way the wood is explored follows the bad colonial tradition, i.e., the less valued wood goes to the Northeast and South of the country, while mahogany and precious wood go to other countries. The lumber industry annually extracts about 11,3 million cubical meters of wood in log, but only 4,25 million are processed. In 2001, the gross income of the lumber sector was very expressive, reaching US\$ 1,026 billion

¹⁴² Cp. Rogge, J. (2003), p. 17-22.

¹⁴³ Cp. Ninni, K.; Rogge, J.; Oliveira, P. de T. (2003), p. 23-44.

(20 per cent of the State GDP). This represented the generation of 55 thousand direct jobs and 100 thousand indirect ones.¹⁴⁴

The economy is also based on mining: cassiterita, gold, manganese and iron;¹⁴⁵ vegetal extraction: *açaí*, Brazil chestnut and latex; commercial agri-culture: mauve, jute and pepper; cattle raising: especially buffalos, on Marajó Island; and subsistence agriculture.

The farming sector is responsible for 24.5 percent of the State added value. Thus, Pará is a federative unit where farming still generates about one fourth of the GIP. According to the *Observatório da Cidadania Pará*,¹⁴⁶ the familiar farming production contributes significantly to the local economy. Yet, it faces some problems, such as lack of social support, infrastructure, official policies, credit, technical assistance and effective programmes for the trade of products.¹⁴⁷

The familiar farming involves 2.5 million of small farmers, artisans, and fishermen. Although they occupy a minor extension of lands in comparison with big enterprises and land owners, they account for 64.4 percent of the production, with a yield of worked area of 141,91/ha, that is, 5 to 30 times as big a production as that of large farms.¹⁴⁸

The land use has caused social and environmental impacts. Enterprises such as *Carajás*¹⁴⁹ and *Tucuruí*, an hydro-electrical power plant, and the implementation of settling projects attracted investments and migrants to the region and provoked serious damages to the Amazon forest in the sixties. Pará has the highest electric potential in the country, and, presently, it is the 5th national producer of energy. It exports energy to other countries, however, this has not been a synonym for development.¹⁵⁰ The social problems are

¹⁴⁴ Cp. Rogge, J. (2003), p. 17-22.

¹⁴⁵ Pará is one of the richest Brazilian States in mineral resources. Brazil is the world's largest producer of bauxite, gemstones, columbium, gold, iron ore, kaolin, manganese, tantalum, and tin. (Cp. Parks, R. and Lehman, J., 2002).

¹⁴⁶ *Observatório* is a NGO und works as *Social Watcher* in the State of Pará (Cp. Rogge, J., 2003).

¹⁴⁷ Cp. Rogge, J. (2003), p. 17-22.

¹⁴⁸ Cp. *ibid.*

¹⁴⁹ CARAJÁS is an integrated mine-railroad-port system, built and operated by Companhia Vale do Rio Doce-CVRD (Cp. ICEE, 1998).

¹⁵⁰ Energy is sent as aluminium plate to Japan and to the USA (Cp. Ninni, K.; Rogge, J.; Oliveira, P. de T., 2003).

aggravated with the agrarian issue. Pará is one of the Brazilian States where the most serious land disputes have taken place.¹⁵¹

The Human Development Index (HDI)¹⁵² is 0.727 lower than the national average, which is 0.830. Of 143 cities in this State, the HDI of 85 of them (60.5 percent) is comparable to the ones in the poorest African countries, like Guinea, the Congo and Kenya. The illiteracy rate is of 32.7 percent, compared to the average of 9.1 percent in the South and Southeast. Moreover, diseases such as malaria, yellow fever and dengue, as well as the contamination by mercury, keep on putting the inhabitants at risk. Almost 40 percent of the population has a per capita income of up to half the national minimum wage (about 40 dollars). Between 1995 and 2000, the number of informal workers increased from 195 to 300 thousand.¹⁵³

This picture makes clear that the development of strategies for this region needs a serious and challenging shift. This task requires the mobilisation of public and private institutions and of the civil society as well. In this context, the university, for example, may play a key role by promoting a new strategy.

3.2 Federal University of Pará: Sustainable Development Programme (POEMA)

In 1991, the Federal University of Pará, Nucleus for Environmental Studies, launched a programme to protect the ecosystem of Amazon and combat poverty. The programme is called POEMA. The name stands for *Programa Pobreza e Meio Ambiente na Amazônia, or Poverty and Environment in the Amazon, Research and Development Programme*. It seeks forms of co-operation between the university, public and private sectors and the local populations, aiming at contributing towards the generation and implementation of paths for the sustainable development in the Amazon Region.¹⁵⁴

¹⁵¹ Cp. Rogge, J. (2003), p. 17-22.

¹⁵² A combination of indicators related to income, life expectancy and literacy, measured by the United Nations Programme for Development – UNPD, (Cp. Wikipedia, 2004).

¹⁵³ Cp. Monteiro, R. (2003).

¹⁵⁴ Cp. POEMA (2003).

The programme is supported by several public organisations, such as *Secretaria de Desenvolvimento do Município de Belém* (Municipal Secretary of Belém for Development), *Secretaria de Agricultura do Pará* (State Secretary of Pará for Agriculture) and *Empresa de Assistência Técnica e Extensão Rural do Pará-EMBRAPA* (Governmental Organisation for Rural Technical Assistance).¹⁵⁵

POEMA is an interdisciplinary research programme whose team is formed by forest agrarian scientists, health specialists, water supply and treatment experts, sociologists, planners and educators. The main objectives¹⁵⁶ of this inter-disciplinary team are:

- to contribute towards the identification of productive economic, ecological and cultural vocations, generating and transferring technologies and methods that respond to the demands of the rural communities;
- to foment the sustainable management of natural resources;
- to contribute towards the implementation of sustainable chains of production, promoting interaction between rural and urban areas;
- to develop co-operation and exchange between public, private and non-governmental sectors at the local, regional and international levels, to optimise actions to fight against poverty and environmental destruction;
- to elaborate and implement strategies based upon the specific natural and social-cultural environments in the definition of means of integrating *Amazônia* into the global context, encouraging decentralised planning.

¹⁵⁵ Cp. POEMA (2003).

¹⁵⁶ Cp. *ibid.*

The framework of actions developed by POEMA is presented in Figure 3, below:

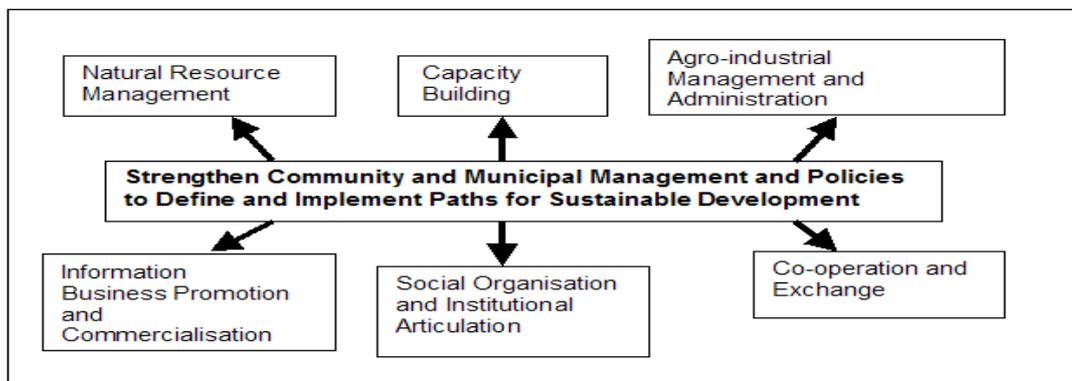


Figure 3: Sustainable Development Programme: Framework of Action¹⁵⁷

The projects carried out by POEMA include activities for: a) processing natural products (e.g.: dry fruits, fruit juices) and canned goods; b) processing natural substances (e.g.: fibers, colours, resins and rubber) so that artificial materials can be gradually replaced by natural ones; c) improving the drinking water supply; d) fostering the use of renewable energies (wind, water, bio-mass) with solar lamps and solar water pumps; e) improving health conditions (e.g.: water treatment and better nutrition); and f) improving health care.¹⁵⁸

Over the last ten years, POEMA has been restructured to follow specific proposals:

- In 1994, POEMAR - Nucleus of Action for Sustainable Development – was born as a non-profit organisation with the goal of making the actions of POEMA more dynamic.
- Within the framework of POEMAR, the Regional Programme BOLSA AMAZÔNIA (BA)¹⁵⁹ was launched, involving the Amazon countries (Ecuador, Bolivia and Colombia). BA aims at capacity building, improving the information channels, and promoting sustainable business. BA provides SIMBA, a regional marketing information

¹⁵⁷ Cp. POEMA (2003).

¹⁵⁸ Cp. *ibid.*

¹⁵⁹ Cp. Bolsa Amazônia (2003).

system, a bridge between supply and demand for sustainable Amazonian products. Producers and buyers interested in Amazonian products can register themselves free of charge in this system per internet.

- In 1999, POEMATEC, a private company, was founded. The objective was to foster a production pole for Amazon natural fibers, i.e., manufactured goods from coconut fiber and latex (see 3.3).
- In 2001, POEMACOOOP, a co-operative, was created for technical staff and rural producers in order to expand and improve the activities of agrarian-industries in rural areas.

This programme caught the attention of researchers of the automobile sector, due to their interest in increasing the use of natural fibers and resins in the vehicle production.¹⁶⁰ Products like coconuts fibers, coming from Marajó Island, have been used in the production of autoparts for cars that are assembled in the Southeast of Brazil.¹⁶¹

3.3 Co-operation between Federal University of Pará and Automaker

Researches carried out in Germany by an international automaker have showed that natural materials can be used in the production of internal autoparts to reinforce plastic or polyester-resin of vehicles. The fiber-reinforced plastics are an example of how natural raw material can replace glass or synthetic fibers.¹⁶² Among the vegetable natural fibers are flax and hemp, which are quite suitable as insulation materials, especially for automobiles produced in Europe.¹⁶³

In 1993, the automaker worked together with researchers from the Federal University of Belém, Pará, in Brazil, to find out how materials coming from rainforest, such as fibers, plant oils, resins, dyes and rubber, could be used in

¹⁶⁰ Cp. Meister, S. (2001), p. 50-58.

¹⁶¹ Cp. Lossau, N. (2002).

¹⁶² Cp. Meister, S. (2001).

¹⁶³ Cp. Farias de, L. J. G. (1993).

the automobile industry.¹⁶⁴ Researches proved that fibers from *curauá*,¹⁶⁵ coconuts, sisal and jute could be used in seats and other internal autoparts. These fibers have good breathing properties, which are appropriate to tropical countries.¹⁶⁶

In addition, these natural materials are ecologically harmless when disposed and lighter than other materials that could be used. This means that fuel consumption may be reduced. Furthermore, the sustainable use of the tropical flora may bring economic, ecological and social benefits, especially to local communities.¹⁶⁷

Such benefits could be reached through a pilot-project initiated in 1993 for the processing of coconut fiber on Marajó Island, in the community Ponta das Pedras, by means of a co-operation agreement between the Federal University of Pará through the Programme of Poverty and Environment in the Amazon – POEMA and the international automaker. A small company was opened: PRONAMAZON - *Centro de Industrialização de Produtos Naturais da Amazônia* (Centre for the Industrialisation of Amazonian Natural Products). Coconut fibers, after being washed and dried, are processed with latex in this company. Its current production levels are 8,000 headrests and 1,000 sun visors per month for commercial vehicles produced by the automobile assembler, which are manufactured in São Bernardo do Campo, São Paulo.¹⁶⁸

The success and increasing demand were the turning point and breakthrough for the development of further sustainable items out of coconut fibers. On March 7th, 2001, POEMATEC – Sustainable Technology for the Amazon Limited - was founded and set up with the construction of the most modern plant in the world for production of goods from coconut fiber and latex, in Ananindeua, in the metropolitan region of Belém.¹⁶⁹

The setting up of this facility included the State Government on behalf of community-related activities, the Municipality (to obtain the factory site), the

¹⁶⁴ Cp. Mitschein, T.; Pinho J. and Flores, C. (1993).

¹⁶⁵ Cp. Ferreira, P. R. (2002).

¹⁶⁶ Cp. Fölster, M. (1993).

¹⁶⁷ Cp. Dubois, J. (1993).

¹⁶⁸ Cp. POEMATEC (2003).

¹⁶⁹ Cp. *ibid.*

automaker (for the machinery and technical equipment on the basis of a leasing contract), the Bank of Amazonia - Banco da Amazônia BASA (for the provision of small credits to the producers' organisation) and the German organisation DEG - Deutsche Entwicklungsgesellschaft (to build the factory infrastructure).¹⁷⁰

During the start-up phase, the automaker has been the main customer, taking up to 60 percent of the company's initial production capacity. POEMATEC produces seat cushions, backrest, head restraints, upholstery noise-reduction panels and visors for automobile industry.¹⁷¹ The facility also manufactures products for other sectors, such as the horticultural and furniture ones. Therefore, inquiries have already been received from potential customers from the automotive industry, such as Honda, FIAT, Ford, General Motors and Volkswagen,¹⁷² as well as from other industries.¹⁷³

Currently, POEMATEC has a staff of 45 employees. Seven of them are in charge of the administration and management of the plant, and thirty-eight employees work directly in the production. Cutting edge coconut fiber processing equipment has been installed in an area of 16,000m². The technology was purchased from the German group F.S. Fehrer, and has an operating capacity of 80t of different artefacts per month. In May, 2003, three shifts with a total of 120 employees reached a production rate of 200 t per month.¹⁷⁴

It is important to remark that the automaker keeps making investments in research and development of natural fiber applications. The experiments made in Brazil are being transferred to the company's plants in South Africa and Philippines, as we can observed below:

“Since September 2000, we keep applying the lessons learned in Brazil to the production of sisal in South Africa. Two local firms are currently supplying us with the natural fiber, and by working with a South African research group, we have succeeded in optimising the entire supply chain, from forest farm right through to assembly line. The first natural fiber-reinforced component was

¹⁷⁰ Cp. Meister, S. (2001), p. 50-58.

¹⁷¹ Cp. Poema Notícias (2004), a.

¹⁷² Cp. Poema Notícias (2004), b.

¹⁷³ Cp. Kunath, W. (2002).

¹⁷⁴ Cp. POEMATEC (2003).

included in one of our passenger models in October, 2001. Since then, the local sisal producers have expanded their customer base to include other automotive manufacturers and companies in other industrial sectors.”¹⁷⁵

“Abaca fiber, from a plant indigenous to the Philippine island of Leyte, is expected to replace the glass fiber widely used in vehicle exteriors and interiors. Test run by our research and development departments indicate that the renewable raw material actually possesses superior properties to glass fiber.”¹⁷⁶

“The main job now is to optimise the production processes and ensure that the Philippine abaca supplier can guarantee sufficient volumes of material of consistent quality [...]. Valuable lessons have been learned by our suppliers of sisal and coconut fibers in South Africa and Brazil respectively, and where transferable expertise is available it is being passed on. To this end, a public-private partnership project has been set up with the German Investment and Development Foundation (DEG), Euronature, the University of Hohenheim and Leyte State University.”¹⁷⁷

In order to gather further information about the use of natural fiber in autoparts in Brazil, a pilot interview was carried out. The results of this interview are presented in the next section.

3.4 Pilot Interview with Automaker

A pilot interview with the automaker was conducted on 26th November, 2002. The main objective was to get a picture of how the life cycle from fiber plantation to vehicle assemblage worked and to identify some problems and gaps in the supply chain for manufacturing components made of fibers.

Five participants of the *Green Group* were simultaneously interviewed at the plant of the company, located in São Bernardo, São Paulo metropolitan region, in Brazil. Data was collected via an opened-question interview (Annex 5). Green group is composed by six persons, and most of them are engineers who search

¹⁷⁵ Heger, W. (2004), p. 32.

¹⁷⁶ Ibid.

¹⁷⁷ Abrahan, O. (2004), p. 77.

for alternatives to replace components made out of non-renewable materials with natural or recyclable ones.

The group started its activities in 1997 due to the interest of the automaker in researching on natural fiber applications in components. The participants are subordinated to three divisions: technical, suppliers and material divisions.

The questionnaire was structured in two parts. In the first part, the group provided a brief overview of the *company's activities* and *environmental and social management measures*.

With regard to **company's activities**, it was informed that the assembler started operating in Brazil in 1956. Currently, it has three plants, which are located in Campinas, Juiz de Fora and São Bernardo, in the southeast region. The production includes the assemblages of trucks, buses, cars and autoparts. The investments in the country increased in the 90's when a new plant was opened in Juiz de Fora for the assemblage of passenger cars. In 2004, a new car model was to be assembled and launched in the Brazilian market.

Regarding **social and environmental management issues**, it was mentioned that an Integrated Management System for Quality, Environment, Health and Safety had been implemented in the three sites. There was an environmental audit and evaluation to control the suppliers (e.g.: a request of their licence to operate). Besides, it was informed that the company had a *social responsibility code*, which acknowledges the nine principles of the *UN Global Compact* and those proposed by the *International Labour Organisation (ILO)*.¹⁷⁸

In the second part, the group answered questions that were directly related to the use of fibers in components. The group explained, among other issues, how the replacement of synthetic fibers with natural ones starts and pointed out some particular aspects of the coconut project carried out by the company and the Federal University of Belém do Pará.

¹⁷⁸ For further information about Global Compact and ILO – see summary of CRC documents – Annex 3.

To replace synthetic materials with natural ones, firstly, the components that can be made out of natural fibers must be identified. Secondly, the possibility of change is negotiated with the supplier. The replacement potentiality and viability must be taken into consideration. Once the potential is identified, a research is initiated so as to find out: a) which supplier can furnish the material? b) which company can process it?

The driving forces towards new fiber applications are the co-operative work with the direct suppliers and investments in research and development. Without technical assistance and information, the direct suppliers will hardly make changes. Therefore, it is important to understand the life cycle, which starts with the visit to the fiber plantation. Once the life cycle is understood, it is possible to identify the potential suppliers that can furnish the fibers and the companies that will process them.

The suppliers of natural fibers are mostly located in the North or Northeast of Brazil, while **suppliers of processed materials and components are located** in São Paulo, south-eastern region. The firm uses components made of natural fibers from Pará in almost every truck model (São Bernado plant) and in one of the passenger car models (Juiz de Fora plant), as presented in Table 4:

Truck/Components	Material
Backrest – Driver Seat	Coconut Fiber
Internal Rear Trim Panel	Sisal Fiber + Castor Oil's Polyol
Visor	Coconut Fiber
Wheel Houging Isolations	Jute Fiber and Cotton
Fender Isolations	Jute Fiber and Cotton
Headrest	Coconut Fiber
Roof Trim Panel	Sisal Fiber + Castor Oil's Polyol
Cup-Holder, Covers	Sisal Fiber + Castor Oil's Polyol
Side Hood Isolations	Jute Fiber and Cotton
Engine Hood Isolation	Jute Fiber and Cotton
Passenger Car/Component	Material
Seat Cushion	Coconut Fiber

Table 4: Components and Sort of Fibers¹⁷⁹

¹⁷⁹ Information provided by Green Group, 2002.

Components such as head restraints and visors come directly from PRONAMAZON (*Centro de Produtos Naturais da Amazônia*/Centre for the Industrialisation of Amazonian Natural Products), located in Ponta das Pedras, Pará (POEMA project). Backrest and driver seats come from POEMATEC, through the first tier suppliers (e.g.: Lear or Johnson Control), which negotiate directly with the company in Pará. Other autoparts, such as internal panels and acoustic isolations, come from the direct or first tier suppliers, located in São Paulo.

Researches to implement natural materials in components, especially autoparts for trucks, have been locally developed by the Green Group in São Bernardo. Tests have been made with *curauá* and jute fibers. In order to verify the possibilities of increasing the supply of these fibers, the group visited the cooperative of *curauá* producers in the region of Santarém, Pará (POEMA project). They also contacted the producer of processed jute fiber in Castanhal, Pará. The plantations of jute are found in the North and in the South of Brazil as well.

The plant in Juiz de Fora does not carry out local researches. They assemble car models. One model has seat cushion which come originally from POEMATEC in Pará. There is another car model that also has components made of coconuts, but they are produced in Germany. The company shall start producing a compact model for the Brazilian market. Thus, Juiz de Fora plant, first tier suppliers and POEMATEC are still negotiating, because the model specifications include components made of coconuts and latex.

The process of deciding on the use of fibers is mainly influenced by two aspects: technological and economic feasibility. Without this combination, the eco-features of products will not increase. Consequently, the main tasks of the group are: development, approval and cost reduction of products made out of natural materials.

The main difficulties in replacing synthetic materials with natural ones are: 1. Finding the right technical resources to guarantee standardisation and quality – natural materials are much more sensitive. The right technology has to

be developed so as to homogenise them. Coconut fibers, for example, have been used in motor vehicles for more than sixty years, but, nowadays, the technology used for processing the fiber is much better. The company's trade mark is directly associated to *high quality*. Thus, it is very important to have it guaranteed. A big problem is the lack of companies that are able to process fibers in Brazil, and **2. Reaching scale production** – a fiber like *curauá* has already presented technical viability and good quality to be applied in motor vehicles, but few producers are able to supply it. Thus, the company uses fibers like *sisal* and *coconut*, which are already found in serial production.

To verify whether social standards have been observed throughout the supply chain it is important to visit the fiber producers to be sure that there is no child labour and to know where *sustainable oriented business activities* exist. Green Group visited, for example, a co-operative of sisal producers in the State of Bahia, APAEB, in the Northeast of the country. They claimed that this co-operative was very well organised and productive. Nevertheless, they could not assure that their first suppliers were receiving sisal from APAEB.

Regarding **logistics management and social standards**, it was informed that the direct suppliers were responsible for buying the fibers (e.g. cotton) and for the logistics control. This means there was no guarantee that the autoparts companies located in São Paulo region were working with the plantations and co-operatives visited by the Green Group.

Considering **the project between company and university** for producing components made out of coconuts and latex, in their opinion, *this sort of project will be hardly repeated*. Normally, the process for material replacement starts with the suppliers of components; in this case, the project started directly with the supplier of fibers.

Other organisations, particularly other automakers, are used to seeing the company as *benchmarking* for the use of natural fibers in the automotive sector due to the project initiated with the university of Belém in 1993. Other automobile assemblers are also interested in components made out of natural fibers or in starting their own projects with their suppliers. There is, for example,

an automaker operating in Bahia State, which is also considering the possibility of starting projects to use autoparts made of sisal and coconuts.

Several organisations and co-operatives have also approached Green Group in order to ask about the company's interest in supporting other similar projects. Actually, these co-operatives and organisations look for financial support. Nevertheless, the automaker has to give priority to its economic interests. The ecological and social interests are seen as side effects.

Scale is considered as a *crucial issue* for fiber production, which affects strategic decisions. Despite of Brazil being a big producer and exporter of sisal, the automaker decided upon concentrating the investments in research and development on sisal applications in South Africa. There, just one component is made of sisal, but the scale of production of these autoparts is very high, which justifies the assembler's investments in Africa.

The interview helped to clarify how the supply chain works. This is presented below, in Figure 4. Some problems of and gaps in the supply chain were also recognised. These will be discussed in the last section of this chapter (see 3.5).

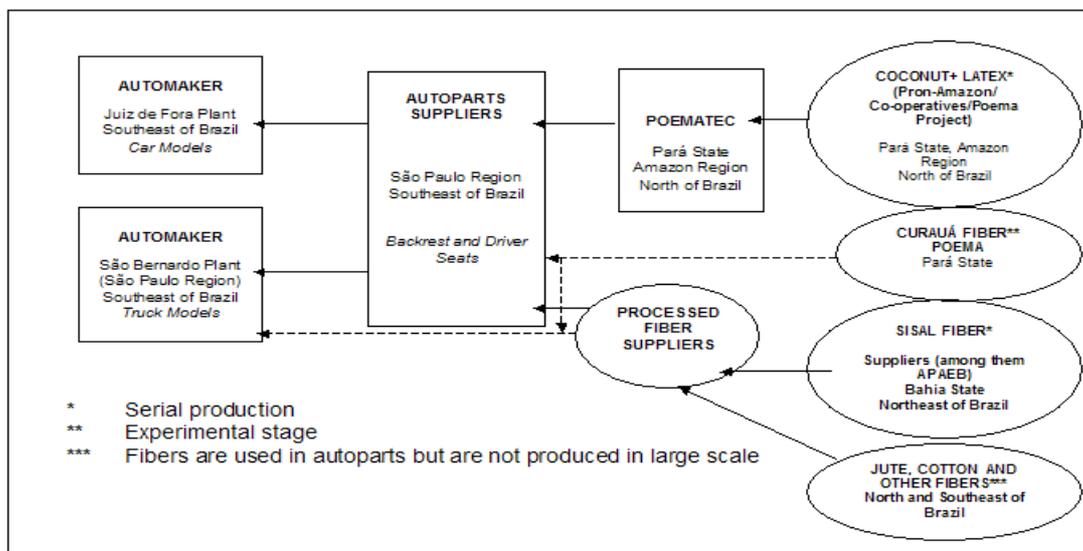


Figure 4: Fiber Supply to Automaker Plants in São Bernardo and Juiz de Fora¹⁸⁰

¹⁸⁰ Elaborated based on data collected from the literature review and from the pilot interview.

3.5 First Theoretical Framework for Verifying Potential of Grouping

As previously mentioned, this chapter attempts to identify some elements of the case study to answer the following question: **which are the key-factors that can exert an influence on partnerships or future CRC arrangements for the automobile industry in Pará state in Amazon region?**

The literature describes Pará as an Amazonian state where there are several problems associated with sustainability. These include, among others, the rapid population growth in the last thirty years and the great stress over the local resources.

Within this context, the interdisciplinary research of the Federal University of Belém do Pará has sought to contribute towards the identification and promotion of sustainable business alternatives in that region. Among these business alternatives, the co-operative project between the university and the automaker for manufacturing autoparts sounds like a good empirical example that can help to explore possibilities for CRC in a rainforest region.

According to the project description, the automaker, in a partnership with the university, the regional and municipal governments, the Bank of Amazon and the German organisation for development - DEG (Deutsche Entwicklungsgesellschaft), opened a factory to produce components of coconut fiber and latex in Ananindeua in the metropolitan region of Belém, in Pará, in 2001.

As it was observed in the interview, these partnerships were motivated by two factors: *scale production* and *appropriate technology to guarantee sufficient volume of material with consistent quality*. The interview also made it clear that there is a gap in the chain, i.e., few companies are able to process fibers. Demands for scale and technology improvements are certainly big challenges to the fiber producers and processors.

According to the interview, co-operation between automaker and fiber suppliers is not a common practice to replace synthetic materials with natural ones. The replacement of materials in autoparts mostly depends on common

arrangements and projects between automakers and first tier suppliers. In addition, the interview mentioned that the case of coconut project would hardly be repeated.

However, reports on automaker investments in alternative materials have shown that the experiences and lessons learned in Brazil have been repeated and applied in South Africa and in the Philippines. In these countries, there are projects with the suppliers of *sisal* and *abaca*.

Some characteristics of the automotive sector, such as modularization and eco-design, make it clear that automakers and first suppliers are certainly the main responsables for research and development projects. However, co-operative projects with fiber suppliers sound like a strategic decision made by the multinational to optimise the supply chain in emerging markets. Without investments and support, the fibers suppliers and processors would hardly be able to improve quality and reach higher scale production.

Thus, the company's reports and the empirical example suggested two hypotheses that can affect grouping of organisations in this region:

1. **Productivity Factor** - automaker, suppliers, university and government, local bank and international development organisation co-operated to provide answers to the *higher scale production* issue.
2. **Development of Adequate Technology** – organisations worked together to provide *consistent quality*.

In order to verify whether these or other factors can influence CRC arrangements for the automotive sector in Pará, other actors (e.g.: automakers, suppliers) had to be investigated. Some questions were formulated to verify CRC risks and opportunities and to detect the key-factors:

1. Which would be the most important partners to support and promote the fiber business and regional sustainable development?

2. What are the possible difficulties associated to the use of fibers?
3. What can prevent the development of CRC's?
4. What could be solved through the co-operative work?
5. Which kinds of competencies and problems exist?
6. What are the main driving forces to motivate partnerships among organisations?
7. Which could the possible cluster arrangements be?
8. What sort of policies and incentives are needed to foster local capabilities and structure?
9. Which would the best strategy to develop suppliers be?
10. Which are the future perspectives of the *fiber market*?

Considering the ten questions above, the literature review, and the pilot interview, a semi-structured questionnaire was formulated (Annex 7). This was sent per e-mail to the identified stakeholders. In the next chapter, the findings, analysis, and the identified *key-factors* will be presented.

4 Results and Analysis

This chapter presents the results and analysis of the questionnaires. The analysis aimed at identifying the key-factors that might influence partnerships among organisations in Pará.

The chapter is divided into four parts. The first part describes the method and the organisations, which were interviewed. The second one presents the main findings. The third one shows the analysis. The final subsection presents the key-factors detected.

4.1 Method and Description of the Groups Interviewed

This data was collected through a questionnaire (Annex 7) that was sent per e-mail to twenty organisations. Twelve of them answered. These institutions include three automakers, four first tier suppliers, three suppliers of processed fibers, one university and one automotive sectorial association (Annex 4). Most of the questionnaires were answered and sent back per e-mail during December, 2003 and February, 2004. A few questionnaires were answered per telephone between March and April, 2004. Contacts were also made with governmental organisations and a co-operative of small fiber producers, but answers to these questionnaires were not obtained. The organisations were identified through literature review and information provided by Green Group in November, 2002.

4.1.1 Automakers

The automakers will be referred as *AA*, *AB* and *AC*. **Company A** has three plants in Brazil, located in the southeast region. It manufactures passenger vehicles and trucks. It is controlled by North American and European shareholders. **Company B** has five plants, located in southeast and south regions, where light cars, trucks and buses are produced. It is controlled by European shareholders. **Company C** has four plants, located in southeast and south region, and produces light cars. It is controlled by North American

shareholders. The contact persons work in the department of technology and quality (AA), engineering and product development (AB), and polymer and material engineering (AC), respectively. A pilot interview was already conducted with AA in November, 2002.

With regard to environmental issues, all these plants have a environmental management system and are certified by the norm ISO 14000. Automaker B has had a *sustainability committee* since November, 2002. This committee is formed by representatives from different departments, such as Environmental Engineering and Quality. The three companies control the environmental quality of their direct suppliers. They verify their license to operate and whether they are following the local environmental legislation. Concerning the social responsibility issue, all these companies have adopted an ethical code. Automakers A and B mention in their codes that they follow the UN principles, i.e., Global Compact.

4.1.2 First Tier Suppliers – ABC/São Paulo Region

The four suppliers will be referred to as *SD*, *SE*, *SF*, and *SG*. **Supplier D** furnishes roof trim panels, covers and side hood isolations made of sisal to automaker A and negotiates with automaker C to starting furnishing isolations. **Supplier E** furnishes internal components made of jute, sisal and cotton to the three automakers. **Supplier F** furnishes rear covers, compartments and roof trim panels made of curaurá to automaker B. **Supplier G** furnishes seats made of coconut fiber to automaker A and has been developing and implementing a project to furnish *instrument panels* made of jute to automaker C.

Suppliers D, E and G are certified by ISO 9000 and 14001. Supplier F is certified by ISO 9000, and will receive the *green stamp* for the project with curaurá fiber. The companies are owned by Brazilian shareholders, except by company G, which is owned by North American shareholders.

All these companies develop their activities in ABC¹⁸¹ region. ABC is the nickname of the mostly industrialised Brazilian region in the environs of São Paulo city, where the plants and headquarters of several automotive companies are located, such as Ford, Volkswagen, Mercedes, Scania and General Motors.¹⁸²

4.1.3 Suppliers of Refined and Processed Fibers – Non-Industrialised Tropical Region

The three companies will be referred to as *SRF* (supplier of refined fibers) *H*, *I* and *J*. **Supplier H** is a factory located in Ananindeua, Pará, which was opened in 2001 with support of the Federal University of Pará, automaker A and local State and Municipal governments. It manufactures products made from coconut and latex. **Supplier I** is a factory located in Castanhal, also in Pará, and manufactures products made of jute. **Supplier J** is a company in Salvador, Bahia, and sells refined sisal. Bahia State is the main producer and exporter of sisal in Brazil. The State is located in the Northeast of Brazil, which is also a non-industrialised tropical region. This sort of fiber is not produced in Pará; nevertheless, sisal fiber is widely used in the automotive industry. Thus, the supplier was included among the organisations investigated, as it could give important contributions to this research.

4.1.4 Sustainable Development Programme – Federal University of Pará

Firstly, it was identified to which projects or initiatives related to this programme the questionnaires should be sent. The following projects or sub-divisions were identified: Pron-Amazon (Centre for the industrialisation of Amazonian Natural Products) POEMAR (Nucleus of Action for Sustainable Development), POEMACOOOP (Co-operative of Technical Staff and Small Rural Producers) and Bolsa Amazônia (Amazon Stock-Exchange). Secondly, questionnaires were sent to all these projects per e-mail. One questionnaire was answered by the communication department of POEMA. According to the contact person, in

¹⁸¹ For exact location of ABC region, see map of Brazil, Annex 2.

¹⁸² Salerno, M. S. (2001).

order to answer the questionnaire, a meeting was organised so that the representatives from different POEMA's organisations could give their opinion. The university will be referred to as *UNI*.

4.1.5 Sectorial Associations

The literature on Brazilian automotive industry often refers to two important associations: ANFAVEA (National Association of the Automotive Manufacturers in Brazil) and SINDIPEÇAS (Labour Union of the Brazilian autoparts industry). Questionnaires were sent to both associations per e-mail, but they were not answered. An interview was conducted per telephone with the technical assessor to environmental quality issues of ANFAVEA. It was not possible to apply the questionnaire. Therefore, the contact person gave general information about the topic: *the use of fibers in the Brazilian automobile industry and ANFAVEA role*. ANFAVEA will be referred as *SECT*.

4.2 Results

This section presents the results of the questionnaires. These aimed at identifying some elements (e.g.: actors, problems, driving forces, competencies) that can pull CRC arrangements in Pará.

Answers to question number one, *which institution might influence the development of CRCs in Pará State?*, pointed out that the main stakeholders are the assemblers, autoparts suppliers and government of Pará.

Organisations stressed that all the actors (e.g.: governments, universities, NGOs, labour unions, companies) play an important role. Nevertheless, assemblers and autoparts makers are considered very important drivers because they represent the *market*, i.e., they can pull the *chain* and have direct influence on supply and demand. Moreover, they are the parts most interested in adding value to the product. Some interesting comments were:

“Autoparts suppliers play an important role in the supply chain, because they are in direct contact with the fiber suppliers. Their components have to be

furnished according to technical and quality specifications, which are determined by the assemblers” (AC).

“I guess that, to talk about the use of fibers, it is important to consider the opinion of the first tier suppliers, because the automakers buy components from them. In addition, they are taking much more responsibility, i.e., co-design” (SECT).

“Unless there is some demand for jute fibers coming from automakers and component suppliers, the chain will never be started” (SRFI).

“The automakers are the main drivers. The component suppliers could also have some influence by adopting strict policies concerning the use of synthetic materials” (UNI).

The contact persons also mentioned the local government of Pará as another fundamental driver, because fiber business chance means income generation to the local communities. Moreover, the organisations remarked on elements that affect business chances: a) the region offers suitable climatic conditions for growing the fibers; b) there is an increasing interest in natural fiber consumption. Therefore, it is expected that the government shall take on some responsibility in order to foster business in the region. It is particularly expected that the government provides incentives to investments and infrastructure development. An automaker draws attention to the following aspect:

“The local government of Pará has to develop a right marketing campaign. If the government does not say what the local people have to offer, the businessmen might take too long to know that we have national products that can be used” (AA).

Universities and NGOs were not pointed out as main stakeholders, but suppliers often mentioned the universities as they can carry out research projects to find out new applications of fibers. Nevertheless, answers remarked on problems between universities and companies, such as *timing* and *interaction*. NGOs were mentioned as *facilitators* that can help rural producers

access information and financial resources oriented to sustainable development projects. Some interesting comments were:

“The researches on the use of curaurá have been supported by the Regional University of São Paulo (UNESP – Universidade do Estado de São Paulo). This is also important to assure quality and scale” (AB).

“The field studies carried out by the researchers at the university are very important to develop new fiber applications. Nevertheless, few studies aim at practical results. There is a gap between university studies and industry practices” (SF).

“Our company, for example, works with the suppliers to develop a new product made of jute. We have also exchanged information with a master student from the University of Viçosa, in Minas Gerais State, because he has been investigating possible applications of this sort of fiber” (SG).

“The NGOs can also help connect companies, governments and research centres. The problem that I can see, in regard with university, is that its efforts cannot answer to the company’s timing. This happens due to its academic characteristics and its bureaucracy” (SJ).

Most of the organisations did not make any comments about the sectorial associations. However, an important remark was:

“I guess their activities are concentrated in the south or southeast regions, they do not know the North region” (Uni).

Answers to question number two, *which are the possible difficulties associated with the use of natural fibers in the automotive industry?*, pointed out the costs, i.e., investments in research and development, equipment and logistics, the cooperative work with the autoparts suppliers, lack of fiber processors and lack of appropriate technology as the major difficulties.

Both the companies and the university mentioned that the distance between Pará, in the North region, and São Paulo, south-eastern Brazil, is a very big

problem, due to the high logistics costs. Some significant comments, for example, were the following:

“For the production of a new passenger model for the Brazilian market in 2004, we are interested in using autoparts made of natural fibers. Therefore, we visited the supplier in Pará as well as the Project of the university in Belém. A very important question concerns the logistics issue. We should find alternatives to reduce the logistics costs. One possibility is that the supplier in Pará could directly furnish the fibers in compressed bales to the supplier in São Paulo. By using bales, we can reduce material volume and logistics costs” (AA).

“Last year, we started producing a light car, and among the specifications, autoparts made of coconut were included. However, we are still discussing some possibilities with the supplier. We have to find out alternatives to the logistics costs. We have negotiated with our first tier suppliers. We have established a target price. Our direct supplier has negotiated with the supplier in Pará. Currently, the costs for using coconut fiber in the seats, instead of using foam, are higher. Up to the moment, we have not used coconut fibers. They are among the specifications, but these have not been implemented yet. We built tools to evaluate and *took a picture* of that, *which has not shown economic viability* yet. This is very much related to logistics costs. The transport of goods by road is still very expensive in Brazil. We keep studying alternatives” (AB).

“Distance and logistics costs are a problem. We even tried to carry out tests to grow fibers in other regions, such as São Paulo, but Pará offers the best climatic and soil conditions. If we had produced the fibers in São Paulo, we could have created a problem to the grains, which would affect the whole production process” (SF).

“There are no investments in research and development activities because we are far way from the automobile polo, i.e., the Southeast of Brazil” (SRFJ).

The lack of fiber processors and appropriate technology are also challenges, as it can be seen below:

“In Brazil, there are only two suppliers that are able to furnish processed fiber samples to the automobile industry. These two companies are located in São

Paulo region, and they are able to process fibers like sisal, jute, curauá, among others” (AA).

“I guess a big difficulty that we have to face is that there are no fiber processors. We have to care about developing suppliers” (AB).

“The suppliers generally do not invest in new machines/equipment. Most companies work with machines from the sixties. We mould autoparts through a thermal system. We had to invest in equipment to process curauá leaves, because we get the fibers from them” (SF).

“We collaborate on projects with automakers and suppliers to develop products made of jute. However, up to the moment, without commercial results. We have a vertical structure: we can process, sewing and produce the fabrics, however, we are not able to produce mats” (SRFI).

Finding and developing the right technology is also a difficult task, as it was mentioned by one of the first tier suppliers:

“The use of natural fibers might mean some problems to the production chain. In the automobile sector, everything works very fast. In order to find an appropriate answer to the automaker demands, we decided to adopt a rotation production system within 10 hectares, because curauá fiber takes 18 months to grow. The rotation system is a way to guarantee constant crops without losing anything” (SF).

“Qualified workers and research activities are fundamental to develop new fiber applications and keep the natural characteristics of the product” (SG).

Answers to question number three, *which are the reasons that might prevent the development of CRC's for the use of natural fibers?*, clearly showed that the main burdens are: the co-operation among the different groups interested (e.g.: governments, automakers, small suppliers) and lack of appropriate business strategies.

Suppliers often mentioned the need of co-operative arrangements, and the difficulties to reach them:

“I would say that it is very important to gather up efforts to reach common benefits. The financial support is a crucial issue. The Bank of Amazon offers credit to companies interested in investing in this region. This is already a good initiative. However, there are lots of problems that have to be faced by those interested in investing in this region: a) Pará is located very far away from the production poles, and the roads are in bad conditions. For this reason, the local government is offering fiscal incentives and tax reductions; b) the governmental bureaucracy delays everything. For example, we planned to open a new farm-factory to start producing and processing curauá fiber within six months. However, we had to wait ten months because of the bureaucracy” (SF).

“The automakers make important decisions without having any idea about the reality of the Amazon fibers. The autoparts suppliers develop their products without support from the universities. The academic investigations are too technical, which causes restrictions to practical applications. There is no coordination” (SRFI).

“Partnerships are very important, but it is very difficult to develop them, because competitiveness in the automotive sector is very high” (SRFJ).

“The successful use of fibers will only be reached when all aspects of the supply chain are considered and all the groups interested make an effort to achieve them. In this case, only one or two groups make decisions, then, the final results will be negatively affected” (SRFI).

Organisations remarked on the need of a business strategy oriented to value adding and improvement of local social conditions:

“Without appropriate business strategies, without technical and financial support to the suppliers, especially to the fiber suppliers, it is impossible to develop products. Problems like shortage of fibers represent a risk to the production chain” (SE).

“In my opinion, a crucial issue is the development of technology. We have the example of the jute fiber; the local producers generally live near the Amazon river banks, where they extract the plants. These fibers are sometimes exported, but without any added value. The production method is very primitive, without any sort of technology, i.e., without any added value” (SF).

“With right business strategies, we could even become a big international supplier. The important question to be discussed in this particular case is ‘added value’. It does not make sense to be an exporter of fibers as *commodities*. We have to concentrate on technological development” (SG).

“It is very important to develop the right business strategy and provide adequate incentives for productive associations located in poor regions in Pará. In Brazil, projects are mostly based on competition, they are not based on co-operation between regions, sectors or organisations” (Uni).

Answers to question number four, *which problems can be solved if different groups work together?*, pointed out the following problems: scale and quality.

Suppliers and university, for example, mentioned the following:

“A co-operative work could avoid problems such as shortage of fibers in the market and improve product quality” (SE).

“I guess problems such as scale and quality, among others, could be solved. For example, in order to guarantee quality and quantity, we developed research activities together with the State University of São Paulo (UNESP) in Botucatu. Currently, we keep an agro-engineer from UNESP in Santarém, in Pará State. There, we also work together with EMBRAPA (a governmental organisation for rural technical assistance). We develop technical studies to keep the natural properties and quality and improve the performance of the curauá fiber” (SF).

“This is a *chicken-egg-situation*, it is difficult to tell which thing causes the others. Scale and quality depend very much on fiber and autoparts producers. These two groups will need the help of all the groups interested so as to make the business viable” (SRFJ).

“With appropriate investments, issues such as scale of production and cost competitiveness can be solved” (Uni).

Organisations mentioned the verticalisation of the production as an alternative to address scale and quality issues:

“For starting supplying autoparts made of curauá, we developed a project with small producers in Santarém, in Pará. They used to furnish our supplier in São Paulo, which was responsible for fiber processing and mat producing. We were just moulding the components. Then, we decided to verticalise the whole process from grain plantation to autoparts manufacturing. Currently, we have know-how of the whole product life cycle, from agricultural production to autoparts manufacturing. Compared to other suppliers, we can offer better quality and better possibilities of offering products” (SF).

Answers to question number five, *which competencies can be offered and which needs shall be addressed?*, demonstrated that several stakeholders located in Pará already have important skills that would be relevant to the development of a cluster. Yet, these also face some difficulties that must be overcome. A summary of the main answers is provided below:

Stakeholders	Competencies	Needs
Fiber Producers	The State is the 2nd coconut producer.	Incentives to spread the use of coconut as fiber, food, etc.
Co-operative of Fiber Processors	At local level, they have a great influence on the market of processed fibers.	Investments in capability/capacity development and resources to diversify the production.
POEMAR	Know-how in organisation, staff training and operation of local industries.	Support from government and aid agencies to promote actions in the fiber production sector as well as in other sectors.
POEMACOOOP	Structure to support local associations, assisting them to access credit and obtain gains in their commercialisation processes.	-----
POEMATEC	The only company with productive capability and international quality. It offers technology, scale and quality.	New markets to operate at full capacity. It needs a cheaper logistics system.

Stakeholders	Competencies	Needs
Amazon Stock Exchange	Mechanism operating at regional level for promoting Amazon products in the market.	It needs new partners and investments to amplify actions to international markets.
Pron-Amazon	Local agro-industry with a differentiated supply to the truck assembler (Automaker A).	It needs to diversify its products – for example, garden products; it needs new investments.
Other Actors :		
e.g.: PEMATEC	Know-how of the whole product life cycle, from agricultural production to autoparts manufacturing. Compared to other suppliers, it can offer better quality and better possibilities of offering other products.	-----
e.g.: Pará State Government	Policy of development without destruction; interest in the verticalisation.	Investments in new supply chains for fiber production as well as in other sort of rain forest products.
e.g.: Bank of Amazon	Credit to firms to promote sustainable business activities/verticalisation.	-----

Answers to question number six, *which interests could work as drivers of the development of CRC's?*, pointed out: quality and productivity improvements through the co-operative work, market niche that places value on eco-features of products and co-operative work among the groups interested (e.g.: automakers, suppliers), which could mean savings in investments and risk sharing.

Automakers, suppliers and university stressed the importance of some partnerships to guarantee productivity, investments and risk sharing, as it is mentioned below:

“We were interested in using curauá fiber in some components. Our supplier was interested in supplying the components made of this fiber. They were already working with some projects to test the use of fibers (sisal, jute, rami, kenaf) in the internal part of vehicles. Then, they started mapping out the possibilities. They made the first contact with the University of Pará. They collected the first information. They mapped out all the stages and important aspects: grain production, crops, logistics structure, and commercialisation. They started a programme with producers in Santarém region, in Pará. We (auto-maker + suppliers) developed components together, e.g.: compartments

made of curauá (50%) and resin (50%). Through this co-operation, we were able to get the approval for the autoparts in our headquarters in Germany. Presently, our supplier has three farms in Pará, in a factory to refine curauá leaves and produce the fibers. They have got the support from the local government and the Banco of Amazônia (Bank of Amazon). Through the curauá project, the supplier can generate income for the local communities. The support for the project from the Bank of Amazon was obtained because it was proved that we, as automakers, were interested in buying the components” (AB).

“We, for example, have supplied products made of natural fibers, such as jute and kenaf, for three years. Automaker *B* was already a customer to which we used to furnish components made of natural materials. *AB* was interested in using autoparts made of curauá. We started furnishing compartments to one of their vehicle models two years ago, but we were not responsible for the fiber plantation or processing. *AB* was preparing a new project, a new car model, which started being commercialised in the Brazilian market in October, 2003. It is a vehicle that is also exported to North America, and it shall be exported to Europe in 2005. Among the specifications, there were components made of natural fibers. Therefore, *AB* was interested in scale production. They did not want to depend on NGOs or small co-operative production. Therefore, they looked for a supplier that could offer a verticalised structure: from fiber plantation to autoparts production. We took on this responsibility, and opened a farm-factory in the Santarém region to start the serial production. This investment became possible because we were supported by local government and got credit incentives from the Bank of Amazon. We presented a project to the local government, showing that *AB* was interested in our production and that other automakers could also become our customers. For the government, there was also the possibility of jobs and income generation in the local communities” (SF).

“POEMA believes in the power of partnership with different actors to put issues like incentives and public policies forward, as well as to support the university extension activities, technology transfer, etc” (Uni).

Organisations remarked that final consumers do not put value on eco-features, as we can infer from the comments below:

“The main interest is undoubtedly the association of the company’s image with good environmental and social practices. However, these practices include cost factors, and the consumers, even those who are sensitive to these issues, do not want to pay more for the company’s good practices” (AC).

“The final product consumer cannot differentiate environmental and social responsible companies from those that do not place value on such issues” (SRFH).

“The local consumers do not place value on environmental characteristics of autoparts” (Uni).

Nevertheless, the existence of a market niche could be an important motivator to bring organisations together:

“The largest the market is, the strongest the possibilities of developing clusters are” (SE).

Answers to question number seven, *what could influence the development of CRCs to increase the use of autoparts made of natural fibers?*, showed clearly that clusters arrangements could be pulled by innovative companies that invest in social and environmental management and public policies that impose statutory compliance and fiscal measures as a means of improving corporate responsibility standards.

Automakers and suppliers remarked, for example:

“The government could push the use of fibers by giving incentives or imposing statutory compliance demanding the use of certain amount of fibers in autoparts” (AC).

“A very important aspect is the specification determining the use of natural materials. This sort of requirement could be reached when both the State and Federal governments as well as companies could work together” (SD).

“I would say that many things depend on the private initiative. The government sometimes represents problems, due to bureaucracy and corruption” (SG).

“In the specific case of our company, there is an initiative that is very interesting. We are adapting a programme that was initiated in our headquarters in Germany for generating jobs and income. We collaborate with our local supplier on the research and development of components made of curauá fibers. We keep studying other fiber applications, such as in mattresses, packing, civil construction. We are interested in making other investments” (AB).

“The positive results achieved with the use of fibers in the Brazilian automotive sector are much related to automaker efforts and innovation interests” (SRFJ).

Answers to question number eight, *which would be the best choice considering the supplier development issue?*, pointed out that the best strategy would be to start working with the suppliers of fibers and co-operatives that already exist in Pará and support initiatives that could lead to local improvements.

Some interesting remarks were:

“It would be easier to use the structure already offered by companies like POEMATEC. In addition, it would be important to develop a marketing campaign drawing attention to the importance of their work” (SD).

“The direct suppliers have to address high specification demands; thus, the privileged suppliers are those that are already certified and trustful. However, it does not mean that the automakers cannot support the development of new local suppliers” (SE).

“We are negotiating with our direct suppliers so that they can receive jute from the local Amazonian communities” (SG).

“I guess the easiest way is to invest in the structure that already exists. Automaker A does not invest in management of the project coconut/latex anymore” (SRFH).

“The first and second tier suppliers are responsible for the tests to use natural fibers in autoparts. These suppliers need to obtain advantages from local governments and automakers so that they can be motivated to invest time and

money in new products that will compete in terms of price with products made of synthetic materials, which have already a consolidated technology and scale production. The fundamental challenge of the fiber and component producers is to trade with competitive prices” (SRFJ).

“It is fundamental to support the development of new suppliers to consolidate the risks with the local productive firms. These efforts should be done in partnership with other governmental as well as non-governmental organizations” (Uni).

Answers to question number nine, *how the governmental policies can collaborate with cluster arrangements?*, propose policies that support business projects with a social and an ecological orientation.

Companies and university remarked on the following aspects:

“As already pointed out previously, although there is some interest from different groups in environmental and social oriented products, the cost factor plays a fundamental role. Without governmental policy formulation, financial support and fiscal incentives, such projects will hardly succeed” (AC).

“The government should impose the use of natural materials as a kind of specification for the interior parts of the automobiles. In this way, productivity, quality of raw material and components would improve, while costs would decrease. Thus, the interest in the product would increase” (SD).

“A policy that could support and facilitate the investments or that had less bureaucracy” (SF).

“I do not know the Sustainable Amazon Programme (PAS – Programa Amazônia Sustentável), but I would say that we do need a policy to support those producers that use renewable resources. For example, some *common agreements* could be created so that all the automakers could use some components made of natural materials” (SRFH).

“It is important to provide fiscal and economic incentives to companies with track record in social and environmental management. A stronger support to

build the last tier is also quite demanding, and this means assistance to those who are responsible for the production and refinement of fibers” (Uni).

“The Sustainable Amazon Programme (PAS – Programa Amazônia Sustentável) proposed by the federal government is still being discussed. Presently, the local government actions are much more important, and I mean the municipal and state governments. There are already good examples. In the State of Pará, there are incentives to mining projects that use cleaner technologies. In the State of Amapá, there are incentives to sustainable fishery projects” (Uni).

“The regional government and Bank of Amazon also encourage the verticalisation of the production. This is an important initiative” (Uni).

Answers to question number ten, *which are the future perspectives for the fiber market*, pointed out *growing possibilities*, as it can be verified below:

“There is a growing trend towards the use of natural fibers in the automobile sector. In the next two years, I guess, this market will increase 45%. Currently, we can make autoparts from sisal, jute, curauá, coconut, kenai and rami, and we will keep making investments” (SF).

“I guess the perspectives referring to the use of natural materials in autoparts are very good. We will furnish parts made of coconut fibers to the new passenger car that automaker *A* is going to start commercialising in Brazil in 2004. We are negotiating with automaker *B* to start furnishing seats made of coconut to some of their passenger cars. We are also developing a project to produce an instrument panel made of jute fibers” (SG).

“In the automotive industry, there is an effort to find out materials that could replace polyurethane. Companies also search for recyclable materials. The question is related to costs, i.e., polyurethane and recyclable material costs. There is a growing trend towards the use of ecological materials. This is an international trend. In Brazil, the replacement by alternative materials is also an important issue, but the focus is on costs. The most important thing is to respond to the automaker specifications and keep low costs” (SG).

“To use fibers instead of foams to produce seats is more expensive, but there are several aspects that have to be considered, such as, for example, deposition costs or decomposition of organic matters, that have influence on the market trend. The replacement of synthetic materials with natural ones is a decision that should consider several costs. It is clear that there is a growing interest in natural materials. So, we invested in a research project to start furnishing a panel made of polypropylene and jute fiber to automaker *C*, and we hope to achieve new markets. This technology we are developing is especially suitable to the so-called low-cost automobiles, or motor 1.0” (SG).

“In 2001, we faced serious difficulties, because the passenger car model produced by *AA* did not sell as it was expected. We had to look for other alternatives. So, we developed a new business line, i.e., garden products made of coconut and latex. Presently, we keep supplying to *AA* and *AB*” (SRFH).

“The future of the natural fiber in the automotive market is promising. Therefore, there is a need of consolidating the supplier market. It is not enough to plant the fibers. It is necessary to extract, refine, process and pack them properly; then, the fibers can be transported. All the stages of the process have to be improved” (SRFJ).

“Efforts must be put together. Different sort of fibers can present distinct mechanical properties; however, they have similar functions when applied to components. There is a potential for fiber producer centres not only in Pará, but also in other parts of Brazil, e.g. sisal in Bahia State” (SRFJ).

4.3 Analysis

After having described the possible stakeholders and elements (e.g. difficulties, drivers) that can influence CRC development for fiber production for the automotive sector in Pará, this section confronts the framework of reference (literature background + pilot interview) with the empirical findings.

4.3.1. Main stakeholders

The results showed that the main stakeholders are exactly those ones that can directly influence both the *technological development* and the *public policies formulation and implementation*, i.e., *companies and governments*. These issues are important to guarantee the CRC emergence and its continuous maintenance.

Automakers and first suppliers were pointed out by both the pilot interview and the literature (Meister S. 2001; Mitschein et al. 1999) as the main parts responsible for research and development activities to find out new fiber applications. The empirical findings confirm a common characteristic of this sector, i.e., co-design (Humphrey, J. and Salerno, M.S., 2000). Thus, it is expected that these two groups will work together to produce the eco-featured components.

With regard to technological development, another important actor is the university. However, it would be necessary to develop mechanisms to improve timing and interaction between firms and universities.

The government of Pará was considered as a very important stakeholder, once the fiber business may mean new investments, income and job generation in the region. According to Sustainability, IFC, Ethos (2001) investigation, the sustainable business development can bring direct benefits to the local economy. Therefore, it is expected that the government, as one of the parts interested, will offer incentives to attract investors and improve infrastructure.

Furthermore, according to the CRC theory, governments play a fundamental role in implementing public policies to support sustainable development. A regional government can better detect the local demands and potentialities (e.g. Pará offers suitable soil and climatic conditions to grow fibers). It can also develop an appropriate *marketing strategy* to attract investors interested in sustainable business.

The local NGOs are pointed out as a stakeholder that can help to integrate public with private interests. The automotive sectorial associations are considered less important, since their activities are concentrated on the southeast region of the country. However, such associations and labour unions could play an important role in the formulation of CRC policies and strategies.

To sum up, the answers have confirmed what had been suggested by the literature review in Chapter 2, i.e., there is a need of counting on different actors from public and private sectors to develop socially responsible clusters.

4.3.2 Possible Difficulties

Findings have confirmed two aspects already pointed out during the pilot interview as the main difficulties: *lack of fiber processors and lack of appropriate technology*. Moreover, they have demonstrated that *logistics management* is a crucial issue.

Both small suppliers and fiber processors should improve their capabilities and capacities to add value to their products. Thus, the need of solving this problem can pull partnerships (e.g.: regional bank, governments, first tier suppliers, universities), once organisations are interested in improving and developing appropriate technology. Logistics management may also influence arrangements. Automakers and suppliers are the main parts interested in transport cost reductions.

The literature review (Humphrey, J., Leder, Y. and Salerno, M. S., 2000) showed that modularization is a common practice in the automotive sector. Therefore, the distance between São Paulo (first suppliers) and the Amazon region (fiber suppliers) means a big obstacle to attracting investments. The review also demonstrated that *inadequate public policies*, by giving incentives and reducing taxes, resulted in *rapid access to and destruction of the forest* (Rogge, J. 2003; Ninni, K. et al., 2003). Thus, *logistics management* is an issue that depends on common efforts from public and private sectors, which shall aim at finding appropriate alternatives to reduce costs, considering environmental and social aspects.

4.3.3 Burdens

The findings, as it has already been pointed out in the literature, have confirmed that there is a *high competitiveness in the automotive sector* (Humphrey, J.; Leder, Y. and Salerno, M. S., 2000; Katz, J., 2000). This represents an obstacle to the co-operation among the parts interested. Nevertheless, the answers also stressed that co-operation is a fundamental aspect to reach competitive advantage. This means that organisations (e.g. assemblers, suppliers) should work together to compete.

Organisations also pointed out *lack of a common business strategy oriented to value adding and improvement of the local social conditions* as a burden to the development of CRCs. At the same time, they emphasised that verticalisation of production sounded like a good alternative to develop supply chains.

The CRC theory advocates that there is a need of aligning public and private interests. As long as the local government and bank can give incentives and support to sustainable business initiatives and firms are interested in verticalisation, partnerships represent the possibility of addressing common interests.

4.3.4 Co-operation and Problem Solving

The results confirmed what was already found during the pilot interview, i.e., that partnerships and co-operation may be the appropriate answer to *quality improvement and higher scale issues*.

The answers stressed the need of improving the connections between component makers, academic researchers and fiber producers, since value adding has to be improved throughout the supply chain. As it was verified in the literature (Sustainability, Instituto Ethos, IFC, 2000), this better engagement between the stakeholders could positively impact on aspects such as cost saving and risk reduction and facilitate the access to capital.

4.3.5 Competencies and Needs

Findings demonstrated that in the Pará region *there are already some stakeholders that offer competencies (e.g.: know-how, assistance services to smallholders)*. The identified competencies showed that these actors could play the role of *cluster engines*; in other words, they could pull sustainable businesses and regional development. However, the answers also let clear that *these stakeholders are also facing difficulties, i.e., new investments and markets are urgently needed*.

According to the CRC theory, an important aspect for policy makers and strategists is to identify where the potential lies in order to support the cluster emergence and evolution. However, the empirical results also showed that it is important to identify the local or regional demands, as these will also interfere in the cluster development possibilities.

4.3.6 Main Drivers

Results confirmed the hypothesis that clusters would be pulled by the *productivity, technology improvement and development and legitimacy effects*. Another key-factor was stressed once again: *job and income generation*. Results demonstrated that the factors detected brought together companies, suppliers, fiber producers, local government, agricultural assistance programmes and universities.

Some answers remarked that the final consumer of vehicle does not place value on the eco-features of the products. However, the existence of a market niche would be an important driver to co-operation. It was also mentioned that the European market already plays an important role in this case because some cars are sent to Germany. In Europe, *waste disposal costs* influence the choice for natural materials. Fibers are ecologically harmless when disposed. Thus, the competitiveness of the product is already being affected either by the purchaser's perception and valuation of the environmental impacts or by the legitimacy effect.

4.3.7 Possible Arrangements

The results showed that the co-operation and partnerships could give place to *market-making-clusters or statutory clusters arrangements*. This answer confirmed again that *assemblers, first tier suppliers and governments* are the main actors that can pull clusters.

Companies mentioned that governments could represent obstacles to CRC developments due to problems such as *corruption or bureaucracy*. However, as it was previously mentioned, the governments do play an important role, since they are responsible for policies formulation and implementation.

The answers demonstrated that *innovation skills* are normally associated with the assemblers and first tier suppliers, confirming again what was already verified in the literature (Humphrey, J. and Salerno, M. S.). However, it is clear that, for the CRC development, the whole supply chain should address the *value-adding* issue.

4.3.8 Supplier Development

Answers confirmed what was already verified in the section *competencies and needs*. *There are some suppliers, such as POEMATEC or Pron-Amazon, that have already some of the skills required to supply the automotive industry. However, these suppliers need new investments and customers. Other suppliers, such as the fiber processors, should be developed.*

Due to a common practice in the automotive sector, i.e., *follow sources*, it may be expected that companies will prefer to work with their own suppliers, instead of developing new ones. Nevertheless, the literature review points out that there are some barriers to *follow sources* in emerging markets (Salerno, M., S., 2001). Factors such as *road and usage conditions, local specific needs* and *low volume sites* might exert influence on companies decisions, concerning investments in new suppliers. Thus, companies can keep working with their *trustful* suppliers; however, partnerships and co-operation are important steps to

develop new ones. Previous answers showed that *verticalisation* of the production is a possible alternative to develop supply chains in Pará.

These co-operative arrangements can also be an alternative for the suppliers to manage with the need of improving competencies and keeping lower costs. In other words, the co-operation can be a way to facilitate the negotiations between the automakers and first tier suppliers, which have to keep the *target price*.

4.3.9 Policies

Answers pointed out that *governmental financial support and fiscal incentives to sustainable business* are important to attract companies' investments to this region. Statutory compliance could be also a way to force companies to increase the use of fibers.

The Sustainable Amazon Programme (PAS) from the federal government is not known by some firms. This revealed a lack of integration between governmental and company's interests. The programme focuses on issues such as production and advanced technology, social inclusion and citizenship and infrastructure development. Thus, firms interested in making investments could profit from this sort of governmental initiative.

Apparently, other initiatives from the local government and *Bank of Amazon* (Banco da Amazônia) supporting companies interested in production verticalisation may encourage the development of small suppliers (e.g. fiber producers and processors). According to the CRC theory, it is fundamental to align these private and public interests.

Both governmental programmes (PAS + incentives to verticalisation) are important to strengthen the connections between corporate responsibility and regional competitive advantage. It is necessary to strengthen the governmental initiatives and improve the links between public incentives/financial aid and firms' demands. It is particularly important to develop SMEs (e.g.: fiber processors).

4.3.10 Perspectives

Results showed that *perspectives concerning the use of fiber are very promising*, not only in the automotive sector, but also in other sectors (e.g.: civil engineering, furniture). Furthermore, organisations affirmed that CRC for fiber production could be developed in other Brazilian regions (e.g.: Northeast).

The need of investments to improve the different stages of the product life cycle and to develop research and development was also stressed. These improvements, as it was already verified in the literature (Madruga, K., 2000; Fleury, A. and Fleury, M. T., 1995), represent big challenges to component suppliers, which have to improve competencies and keep low prices, i.e., the target price.

The results let it clear that the automotive sector is investing in fiber applications, and there is a need of improving the stages of the supply chain. Higher productivity, value adding, social and environmental benefits depend on the common efforts of different stakeholders.

4.4 Key-Factors

The analysis helped to recognise the key-factors. Six factors that influence or might influence partnerships in Pará have been identified. The research confirmed that the factors *productivity* and *legitimacy*, as suggested by the CRC theory, may drive organisations to work together in Pará. It also showed that there are other specific regional interests that can influence partnerships. They are: *development of appropriate technology, jobs and income generation, logistics cost reduction* and *trend in the auto industry to use more natural fibers*.

4.4.1 Productivity

The case of *components made of natural fibers* confirmed the hypothesis (Chapter 3) that the co-operative activities between organisations, such as suppliers, universities and technical assistance programmes, are motivated by

the *productivity factor*. These arrangements aimed at approaching *quality and scale* issues.

As it was verified in the literature review (Fleury, A. and Fleury, M. T. 1995; Katz, J. 2000; Humphrey, J. and Salerno, M. S., 2000), these issues became already a challenge for the local suppliers in the nineties, when there was an opening in the market and several international companies started to operate in Brazil. Moreover, the empirical findings showed that the automakers did not want to depend on the production of small co-operatives, and clusters could be certainly a possible answer to production maximization.

4.4.2 Legitimacy

The interpretation of the answers provided by some persons who were contacted shows that the European market already plays a role in the production of fibers for autoparts in Pará. Some of the cars are going to be produced and sent to Europe, where there is a preference for natural materials due to the waste disposal costs. This sort of material can easily degrade when disposed. The CRC theory says that the *legitimacy effect* is determined by the purchaser's perception, i.e., normally it is the market that *pulls* changes through the supply chain. In the case of Pará, an adequate marketing strategy could be developed to make the *rain forest products* much more attractive to concerned consumers.

4.4.3 Development of Appropriate Technology

The answers showed that partnerships between companies, suppliers, universities and agro-business assistance programmes are motivated by the *development of appropriate technology*. This finding confirmed the hypothesis suggested in Chapter 3.

Organisations stressed that *fiber business* depends on *adequate equipment/methods to keep the natural characteristics and guarantee consistency*. Hence, the engagement among the parts interested is pulled by

the interest in finding suitable technology to achieve *standardisation of natural materials*, which behaves totally differently from synthetic ones.

The development of technology to deal with this sort of material is a crucial issue in non-industrialised regions, where there is not a *research and development* infrastructure. Thus, agreements and co-operation between universities, research centres, small producers and firms are of fundamental importance to the industrialisation of products made of natural fibers.

These partnerships are especially important to the local co-operatives, small and medium size enterprises, whose financial resources to invest in research and developments are very restricted. For the local producers, investments will affect aspects such as quality, innovation and access to new markets. For the multinationals, it is an opportunity of keeping on innovating and having a sustainable position in the market.

4.4.4. Jobs and Income Generation

The investigation demonstrated that public (regional/municipal governments/Bank of Amazon) and private (firms) partnerships were highly motivated by governmental interests in *income and job generation*. It could be observed that the opening of some factories and the integrated work between automakers and/or first supplier and co-operative of fiber suppliers represent a new source of income in the local communities in Pará. Cluster arrangements could mean new job possibilities and a wise way of making business preserving the forest.

4.4.5 Logistics Cost Reduction

The investigation showed that partnerships between assemblers, suppliers and government could be influenced by the *logistics cost reduction* factor. This is a factor that affects the automobile industry in a very particular way, once this sector adopts practices such as *modularity* or *industrial condominium* as an alternative to reduce the distance between automaker and direct suppliers. In the case of Pará, the last tier suppliers are located in the north region, where

transport infrastructure is not very efficient, while automakers and first suppliers are in the southeast region.

The literature review (Humphrey, J. and Salerno, M. S., 2000) pointed out the example of the autopartmakers in Mexico, which supply automakers in the USA. The main aspects, in fact, are the *production costs*. Thus, *costs* are a crucial issue that influences the regionalisation or globalisation of the automobile industry. CRC in Pará would be important to improve the costs management through the supply chain. Again, the public policy is very important because it is not only a question of *reducing transport costs* but also of being attentive to the access to and use of natural resources.

4.4.6 Trend to Use More Natural Fibers

The investigation demonstrated that *there is a trend in the auto industry to use a greater proportion of natural fibers*. The automakers and suppliers have been investing in research and development to replace synthetic materials with natural ones. In the case of the Brazilian automotive sector, it was noticed that each automaker/direct supplier is concentrating their research and development activities on a determined sort of fiber (Figure 5).

Automaker A concentrated on components made of coconut and latex. Other fibers, such as cotton and sisal, have been also used in their components, but the assembler did not invest in development of suppliers. Their investments to reach scale production of fibers such as sisal, respectively.

Supplier F verticalised the production of autoparts made of curauá and furnishes these components to automaker B. It is interesting to remark that automaker A started co-operative projects with the University of Pará (POEMA) to search for industrial applications to curauá; however, the project was not further developed because the fiber could not be found in scale and there was a need of investments to guarantee volume of production. Verticalisation to assure quality and scale was the solution found by supplier F.

Supplier G is investing in projects to produce components made of jute to automaker C. In addition, it affirmed that their suppliers are encouraged to work with the local communities in Pará.

Thus, the investigation has let clear that there is a growing investment in components made of natural fibers, as presented below. Interest in innovation is also a good reason that motivates organisations to go into partnerships.

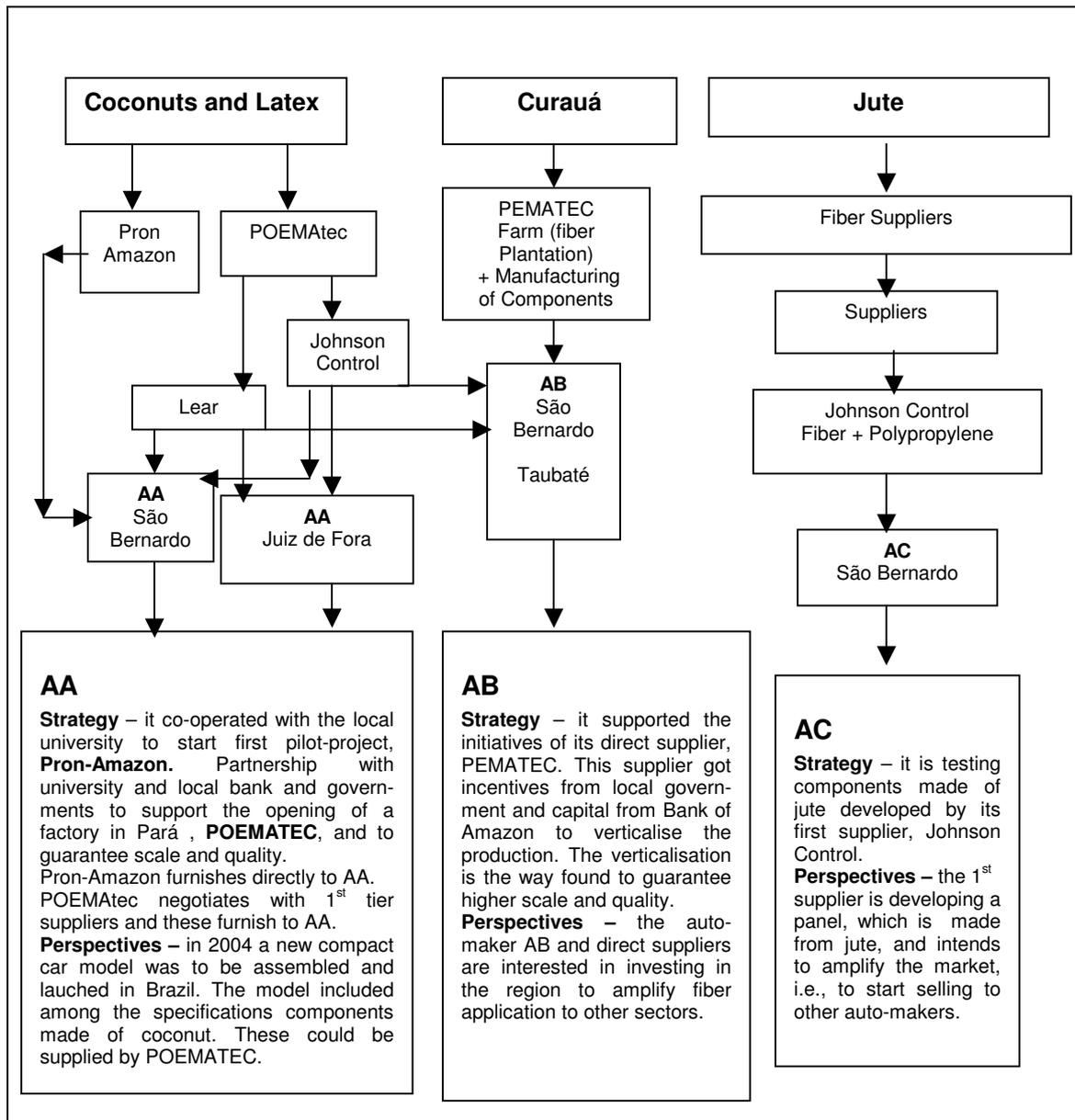


Figure 5: Fibers from Pará Region Used for Autoparts Manufacturing¹⁸³

¹⁸³ Elaborated by the author based on results of the questionnaires.

4.5 Concluding Remarks

This chapter showed the results and analysis of the questionnaires answered by twelve organisations. The empirical results aimed at identifying the key-factors that could influence partnerships or CRC arrangements concerning the automobile industry in Pará State. The main results of these questionnaires were:

1. **Most important stakeholders** that can pull CRC arrangements in Pará State are 1) the assemblers, 2) autoparts suppliers and 3) the government of Pará.
2. **Possible difficulties** associated with the use of natural fibers in the automotive industry include 1) the costs, for instance, investments in research and development, equipment and logistics, 2) the lack of a co-operative work between automakers and suppliers, and 3) the lack of fiber processors and appropriate technology.
3. **Reasons that might prevent the development of CRC** in Pará include 1) the non co-operation among the different groups interested, for example, governments, automakers, small suppliers, and 2) the lack of appropriated business strategies.
4. **Problems that could be addressed if the different groups could work together** are: 1) scale, and 2) quality.
5. **Competencies** that can be offered: 1) the structure and know-how that some local organisations have, such as POEMAR, POEMACOOOP and Bank of Amazon, in dealing with co-operatives and sustainable development projects. Among the **demands**, the following were mentioned: 1) the urgent need of new investments in capability/capacity building, and 2) supply chain development to

diversify the production and reach new local and international markets.

- 6. Common interests that could work as drivers** to the development of CRC are: 1) quality and productivity improvement, 2) market niche that places value on eco-features, and 3) saving in investments and risk sharing through the co-operative work.

- 7. Clusters arrangements could be pushed by:** 1) innovative companies that invest in social and environmental management, and 2) public policies that impose statutory compliance and fiscal measures as a means of improving social-environmental management.

- 8. The best way of developing supply chains** would be: 1) keeping or starting work with the suppliers of fibers and co-operatives in Pará, and 2) supporting the development of new local suppliers.

- 9. Governmental policies** could collaborate with CRC development by supporting business projects with a social and ecological orientation.

- 10. Future perspectives of the fiber market** are very auspicious because there is a growing interest in natural materials.

According to the analysis of the empirical results, the identified factors that could drive the parts interested to work together would be: *productivity, legitimacy, development of appropriate technology, jobs and income generation, logistics cost reduction and trend in the auto industry to use more natural fibers.* The main findings and implications of the research are summarised and presented in the next chapter.

5 Final Results and Conclusions

This chapter presents the answer to the investigation question: **which are the key-factors that can exert influence on grouping of organisations or future Corporate Responsibility Cluster arrangements in a rainforest region?** This section is divided into two parts. The first part presents a summary of the research and the main findings. The limitations and suggestions to further investigations are showed in section two.

5.1 Research Concluding Summary and Main Results

This study was motivated by the search of a sustainable business alternative to a non-industrialised region, more specifically, to an area covered by rainforest. The research was divided into three main steps: a) literature review, b) empirical data collection, and c) data interpretation.

An important scientific support to the discussion on the theme was provided by the theory of Corporate Responsibility Clusters (CRC), which suggests that partnerships between groups or private and public sectors with focus on social-environmental management may positively affect the competitiveness of firms and the regional economy. Considering that there are few publications available dealing with the proposed question and that CRC is a quite new theory, the *case study* was considered as the most appropriate research tool to carry out the investigation.

The case observed was *the production of autoparts made of natural fibers which come from Pará State, located in the Brazilian Amazonian region*. Thus, the literature review also included the description of the investigated region and some important features of the automobile sector, especially considering its dynamics in emerging markets such as Brazil. The main objective of the study was to identify the key-factors that can exert influence on grouping of organisation or future corporate responsibility cluster arrangements in a rainforest region.

The empirical data was collected in two stages. Firstly, a German automaker in São Bernardo, São Paulo region, was interviewed in November, 2002. This firm initiated a project in co-operation with the Federal University of Belém do Pará to start producing autoparts made of natural fibers in the early nineties. The interview aimed at understanding the whole process - from fiber production to assemblage of autoparts - as well as identifying the factors that motivated this co-operation and gaps in the supply chain. Secondly, a questionnaire based on the theoretical background and first empirical results was elaborated.

The questionnaire was sent to a set of chosen organisations and was answered by three automakers, four first tier suppliers, three suppliers of processed fibers, one university and one automotive sectorial association, between December, 2003 and February, 2004. The findings showed that the three automakers adopted three different strategies to assure the use of autoparts made of fibers.

The investments in a co-operative project with the Federal University of Belém do Pará were part of the international strategy of the German automaker. This multinational kept making investments in research and development projects with natural fibers in non-industrialised areas in other emerging countries, such as Philippines. The experiments in Brazil confirmed what had also been pointed out in the literature, i.e., emerging markets *can play the role of laboratory*.

The Brazilian experience showed that some business advantages could be reached through the co-operative work between governments, automakers, suppliers and universities. Among these advantages are lower production costs, higher quality, efficiency, standardisation. Thus, this experiment was repeated by this multinational in other regions in Africa and Asia, where it is also possible to find appropriate soil and climatic conditions for fiber growing.

Another German automaker was also attracted by rainforest fibers and business advantages. In this case, the strategy of the multinational was to support the initiatives of its direct supplier, which opened an autopart production plant in Pará State. The supplier implemented a project in co-operation with the local government and research centres to verticalise the production. The verti-

calisation was the alternative found to guarantee scale and quality. These auto-parts are produced to automobiles sold to the Brazilian and European markets.

The third automaker with headquarters in the USA did not invest directly in Amazon. Nevertheless, it is also interested in autoparts made of natural materials, according to its international direct supplier. This supplier is investing in projects with fibers and has recognised the need of making partnerships with the Amazonian government, suppliers, and research centres, which would add value to the whole supply chain, thus giving access to new markets.

These findings helped explore a new issue, one not discussed by the CRC theory yet. The research on CRC phenomenon carried out by Zadek et al. (2002) observed a serial of case studies, including sectors, such as footwear and clothing or international global chains, in which the firms were under the pressure of high demanding markets. In contrast, this specific research verified cases in the automotive sector.

This industry operates in emerging countries, producing mainly to local or regional markets, but adopting global strategies. The decisions are made in their headquarters, located in the triad regions (Western Europe, Japan and North America). Yet, these strategies might give room to regional aspects, as pointed out by the literature, whenever these aspects can bring advantages to the whole corporation.

Therefore, **a remarkable finding** in this research, which explored the possibilities of CRC development in non-industrialised regions, refers to the importance of observing the dynamics of international corporations operating in emerging markets and how their *global strategies* might consider *regional or local aspects*. In the case studied, reasons such as *large quantity of fibers, appropriate soil and climate conditions, good performance of components made of natural fibers in tropical countries, lower production costs*, among others, had influenced decision-making and investments.

These motives may drive to partnerships between international corporations and local actors, which can give the chance to the emergence of clusters. *The*

influence of regional aspects on global strategies should be considered by policy makers, business administrators and investors interested in mapping CRC potential.

Considering the research question proposed, the analysis of the case of Pará led to two conclusions. The **first conclusion** is that there are similarities between theory and praxis. The grouping of organisations in Pará can be influenced by *productivity* and *legitimacy* factors, as proposed by the theory of CRC. The governments and non-governmental organisations, companies, suppliers, among other groups operating in Amazon, can co-operate aiming at reaching higher efficiency and quality as well as attending the demands of concerned consumers.

The **second conclusion** is that there are other specific regional and sectorial factors that can influence partnerships. In Pará, these particular factors are: *development of appropriate technology, jobs and income generation, logistics cost reduction, and trend in the auto industry to use more natural fibers.*

The answers to the questionnaire highlighted that, despite of the existence of driving forces or key-factors that would motivate the partnerships, a crucial issue would be the management of the cluster. Some particular aspects of this case, such as *high competitiveness in the automotive industry, distance between the Amazon region and the automobile production pole, i.e., São Paulo, and State bureaucracy,* play an important role in and represent difficulties to the development of a common and integrated project.

Nevertheless, the empirical results also pointed out that the common interest in *cost reduction* and *risk sharing* could drive the parts to co-operation. In Brazil, the transport of goods is mainly made through roadways. A logistics cost reduction would be reached, for example, if the two German companies could work with common suppliers.

5.2 Limitations and Proposal for Further Investigations

The results of this case study cannot be generalised, especially considering the fact that the findings are based on data drawn from a relatively small set of stakeholders. However, as a research instrument, the case has helped give a picture of which factors could drive to CRC arrangements in a rainforest region.

Further researches on this theme are recommended to verify if only the key-factors, legitimacy and productivity pointed out by CRC are confirmed or whether some of the identified regional and sectorial specific factors might be confirmed as well. Some of these studies on CRC could verify other examples of arrangements in the Amazon region.

Amazon already offers several examples of *sustainable business initiatives* supported by *private and public partnerships*. Therefore, further investigations will bring important contributions to the theories on responsible competitiveness and might provide a benchmarking to other companies interested in operating in Amazon as well as in other regions covered by rainforest.

CRC arrangements can provide pro-active governments and innovative organisations with the possibility of integrating important issues for sustainability management. In other words, an opportunity to connect issues such as *stakeholder dialogue, supply relations, ethical and fair trade, community involvement, environmental protection, and positive social impacts with economic results and regional development*.

Annex 1 - Map of Brazil



Annex 2 - Brazilian Regions



Annex 3 – Main CSR Documents – Part I

Document	Description		Covered Issues	Date	Origins	Signatories	Key countries
ILO Convention	Conventions	Foundation	Forced and Bonded Labour; Freedom of Association; Right to Collective Bargain; Equal Remuneration; Equal Work; Worker's Representatives; Minimal Wage; Health and Safety; Disabled Persons; Homework.	1919 (onwards)	ILO.	Governments.	International.
OECD Guidelines	Guidelines	Foundation	Environment; Employment; Disclosure/Privacy; Competition; Financing; Taxation; Science/Technology; Product Quality/Safety; Corporate Governance; Marketing/Advertising.	2000 (revised 1976)	OECD Multilateral.	34 Governments.	OECD Countries/International.
ISO 14001	Standard	Process	Environment; Management System.	1996	ISO International.	20,000.	International.
Global Reporting Initiative	Standard	Process	Reporting Procedures; Corporate Governance, Philanthropy/Advertising.	2000 (revised 1997)	CERES (US).	55 Companies.	Europe/US.
SA 8000	Standard	Performance; Process; Auditable; Foundation.	Child Labour; Forced Labour; Discrimination; Compensation; Working Hours; Management Systems, Health and Safety; Freedom of Association; Collective Bargain; Disciplinary Procedures.	1997	Council on Economic Priorities (US).	80 + Certifications.	US, Europe, Asia, Latin America.
AA 1000	Standard	Process	Social, Ethical Accounting; Auditing and Reporting; Identifying Stakeholders; Issues and Indicators; Defining, Reviewing Values.	2001 (revised 1999)	ISEA (UK).	Widespread Influence Rather than Adoption.	Europe, Australasia.
Global Sullivan Principles	Rev. Sullivan	Performance	Human Rights; Environment; Ethics Fair; Competition.	1999	Rev. Sullivan (US).	177 Companies, Business/Public Sector/Religious Organisations.	US.
Global Compact	Principles	Performance	Human Rights; Freedom of Association; Forced/Child Labour/Environment.	1999	United Nations.	300 + Companies and Cities.	Europe, Brazil and India.
Green Paper	Framework	Performance	Human Rights; HR Management; Environmental Management; Quality at Work; Supply Chain; Ethical/Fair Trade.	2001	EU Commission.	EU Countries.	Europe.

Source: Adapted by the author, based on McIntosch et al. 2002

Annex 3 – Main CSR Documents – Part II

Document	CRS Issues NOT Covered	Distinguishing Features	Funding Sources	Positive Elements	Negative Elements	Implementation Requirements	Conflict Resolution/Appeal Mechanisms
ILO Convention	Environment; Animal Welfare; Corruption.	Tri-Partite.	Governments.	Tri-Partite Nature of ILO Gives Legitimacy and Credibility.	Ratification by Governments Does not Necessarily Includes Enforcement.	Governments Ratify Conventions which Become Legally Binding.	ILO Representatives Located in Many Countries but only Provide Training and Promotion of ILO.
OECD Guidelines	Animal Welfare; Indigenous People; Wages/Benefits.	Comprehensive National Contact Points.	OECD.	Breadth of Issues.		Respect Law.	Contact Points in each OECD Country.
ISO 14001	Social Issues.	Simplicity.	Fees.	Well Known.	Comparison with Local rather than International Norms.	Guidelines; No complete Implementation Requirements.	
Global Reporting Initiative		Performance Indicators.	Grants.	Good Governance, Transparency.	Easier for Large Companies to Achieve.	Certification.	
SA 8000	Environment; Indigenous People; Animal Welfare; Corporate Governance; Corruption.	Auditability.	Foundation; US Government; Royalties/Fees.	Accreditation Framework; Potential for Integration with ISO.	Ability of Auditors to Address Social Issues Inadequate Southern Representations, Easier for Larger Companies to Achieve.	Certification.	Yes. Right of Appeal is Given to All Parts Interested.
AA 1000							Not Intended for Use in This Way.
Global Sullivan Principles	Freedom of Association/Collective Bargain/; Indigenous Peoples; Animals Welfare; Corruption; Corporate Governance.	Rev. Sullivan's Reputation, Path Breaking Nature in South Africa.		Rev. Sullivan.	Rev. Sullivan Passed Away; Uncertainty; Lack of Trade Union Support.	Annual Update; Implement Policies, Procedures; Training Reporting.	No.
Global Compact	Animal Welfare, Corruption, Corporate Governance, Indigenous People.	UN's Moral Authority.	Governments: UK, Norway, Switzerland, Sweden, Netherlands, Germany.	UN Moral Authority.	"Talk Shop", no Monitoring.	Letter from CEO; Annual Submission Relating to Implementation; Participation in Issues.	No.
Green Paper				CSR Framework for EU.	Voluntary Principles.		

Source: Adapted by the author, based on McIntosch et al. 2002

Annex 4 – List of Organisations Investigated

1. Universidade Federal de Belém do Pará – POEMA
2. Daimler Chrysler do Brasil
3. Volkswagen do Brasil
4. General Motors do Brasil
5. Corona Comércio e Indústria Ltda.
6. Toro Indústria e Comércio Ltda.
7. Simoldes Plásticos Ltda.
8. Companhia Têxtil de Castanhal
9. POEMATEC
10. PEMATEC
11. Johnson Controls
12. Associação Brasileira dos Produtores de Veículos Automotivos (ANFAVEA)

Annex 5 – Questions - Pilot Interview – (Translated into English)

Corporate Responsibility Cluster Potential in a Rainforest Region - Autoparts Made of Natural Fibers in Brazil -

Name of the Corporation/Institution:

Environmental or Social Responsibility Certification:

Contact Person:

Position:

Department/Sector:

E-mail (s):

Address:

Telephone:

Plants and Products:

Beginning of Operations in Brazil:

1. How does the process to replace synthetic fibers by natural ones start?
2. Which are the driving forces towards new fiber applications in the automotive sector?
3. Where are the fiber producers and fiber processors located?
4. What sorts of components are made of fibers and to which vehicle models?
5. Which components do you receive from the Pará region?
6. Do you keep local researches to keep on implementing fiber in other components?
7. Which are the main aspects that influence on decision for fibers?
8. Which are the main difficulties in replacing synthetic materials by natural ones?
9. How can be assured that the social standards have been observed through the supply chain?
10. How are the social standards observed through the logistics management of products coming from Pará?
11. Do you think that the firm will co-operate with other projects in the Amazon region?
12. Other comments referring to the *Amazon project*?

Annex 6: Questions – Pilot Interview (Original in Portuguese)

Potencial para Agrupamentos de Responsabilidade Corporativa em uma Região de Floresta Tropical Componentes Feitos de Fibras Naturais no Brasil

Nome da Corporação/Instituição:

Nome do (s) Respondente (s):

Cargo (s) Seção (ões) ou Departamento(s):

E-mail (s):

Endereço:

Telefone:

Certificações (Meio Ambiente/Responsabilidade Social):

1. Como inicia o processo para substituir fibras sintéticas por fibras naturais?
2. Quais são os principais fatores que podem influenciar na ampliação do uso de fibras no setor automotivo?
3. Onde estão localizados os produtores e os processadores de fibras?
4. Que tipos de fibras são utilizados nos componentes e em quais modelos?
5. Quais são os componentes provenientes do Estado do Pará?
6. O grupo ou a empresa mantém pesquisas locais para ampliar a utilização de fibras em componentes?
7. Quais são os principais fatores que podem influenciar o processo de decisão com relação à “utilização de fibras em autopeças”?
8. Quais são as principais dificuldades para substituir fibras sintéticas por fibras naturais?
9. Como é possível garantir a observação de padrões sociais ao longo da cadeia?
10. Como os aspectos sociais são observados com relação à gestão logística de produtos provenientes da região amazônica?
11. Na sua opinião, há chances de a empresa colaborar com outros projetos na região amazônica?
12. Outros comentários com relação ao “projeto na Amazônia”?

Annex 7 - Letter + Questionnaire Sent to Organisations (Translated into English)



Universität Bremen

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Produktionswirtschaft und Industriebetriebslehre
Kátia Madruga
WING-Gebäude
Wilhelm-Herbst-Str 12
Raum 008
D-28359 Bremen

Dear Sirs and Madams,

I am sending you attached the questionnaire referring to my doctoral research studies on Business Administration which has been carried out since April, 2001 at Bremen University, Germany.

The title of this doctoral investigation is: **Corporate Responsibility Cluster Potential in a Non-Industrialised Region – Autoparts Made of Natural Fibers in Brazil.**

The investigation is based on the theory of *Corporate Responsibility Clusters*, which has been developed by experts from two research centers - "The Copenhagen Centre" and "Accountability". According to these researchers, companies and their stakeholders (e.g.: governments, NGOs) can work in a co-operative way with focus on the management of social responsibility issues that can cause positive effects on the competitiveness and sustainable development of companies and regions.

The goal of this doctoral investigation is to develop a theoretical framework about the possible linkages between corporate responsibility and the competitiveness of a non-industrialised tropical region. The research aims specifically at identifying the potential factors that could lead to the development of clusters of corporate responsibility in Pará, Amazon Region, and promote the use of natural fibers in the automotive sector.

Your participation in this research will be very important. I kindly request you to fulfil the questionnaire and return it until 03.28.2004. The final findings of this research are going to be published in October, 2004. In case you are interested in receiving a summarised copy of the thesis, I would be happy to send it to you as soon as possible.

I thank you for your time and attention,

Kátia Madruga

Corporate Responsibility Cluster Potential in a Rainforest Region
- Autoparts Made of Natural Fibers in Brazil -

Name of the Corporation/Institution:

Environmental or Social Responsibility Certification:

Contact Person:

Position:

Department/Sector:

E-mail (s):

Address:

Telephone:

What sort of responsibilities and goals does the organisation have?

01. Below, 14 institutions that might influence on the development of Corporate Responsibility Clusters in Pará State are mentioned, promoting the use of natural fiber in automobile components. Please, place the 14 organisations in order of importance and justify your 1st and 2nd options (why would these two organisations be the most important ones)?

Automakers ()	Federal government ()	State government ()
Autopart suppliers ()	Suppliers of fibers ()	Suppliers of processed fibers ()
Non-Governmental Organisations()	Pará Federal University – POEMA project ()	Pron-Amazon ()
POEMAR ()	POEMACOOOP ()	Amazon stockexchange ()
Brazilian National Association of the Automotive Manufacturers (ANFAVEA) ()	National Labour Union of the Autopart Industry – SINDIPECAS ()	Other Institutions () Which ones? Why?

Please, justify the 1st and 2nd options:

02. Below, 11 possible difficulties associated to the use of natural fibers in the automotive industry are mentioned. Please, place the 11 difficulties in order of importance and justify your 1st and 2nd options (why would these two difficulties be the main ones?):

Appropriate technology ()	Costs (investments in research and development/equipment/logistics) ()	Standardisation ()	Co-operative work with the autoparts suppliers ()
Scale of production ()	Unqualified human resources ()	Access to the fiber suppliers ()	Access to the suppliers of processed fibers ()
Lack of financial support ()	Logistics management attentive to the environmental and social responsibility issues ()	Lack of governmental incentives ()	Other difficulties Which ones? ()

Please, justify the 1st and 2nd options:

03. Below, 10 reasons that might prevent the development of Clusters of Corporate Responsibility for the use of natural fibers are mentioned. Please, place the reasons in order of importance and justify your 1st and 2nd options (why would these two reasons be the most important ones?)

Distance (Pará is distant from the traditional automotive production poles, i.e., Southeast and South ()	Competitiveness between the assemblers, which represents a difficulty for the co-operative work ()	Lack of interest or incentives (e.g.: from assemblers, governments) to support the development of local supply networks ()
The co-operation among the different groups interested (e.g.: governments, assemblers, small suppliers) ()	The lack of appropriate public policies ()	The lack of appropriate business strategies ()
The lack of technical capabilities of the local suppliers ()	The lack of technical and financial support to the small rural producers ()	The lack of an appropriate local structure (e.g.: roads, enough suppliers) ()
The lack of common environmental and social guidelines that can conduct the practices of the different companies ()		

Please, justify the 1st and 2nd options:

04. In your opinion, what sort of problems (e.g.: scale, quality, costs) could be solved if the different groups interested (e.g.: governments, assemblers, sectorial associations) could work together, aiming at the social responsibility management and competitiveness?

05. Apparently, Pará State has already a structure (see table below) that could form the basis for the development of Corporate Responsibility Clusters. In your opinion, what sort of competencies can the different actors, mentioned below, offer to promote the use of natural fibers in autoparts? What sort of needs should be met? Do you believe there are other actors that should be considered? Which ones?

Actors	Competencies	Needs
Fiber Producers		
Co-operative of the Fiber Producers		
POEMAR		
POEMACOOOP		
POEMATEC Commerce and Sustainable Technology to Amazon		
Amazon Stock Exchange		
ProAmazon		
Other Actors? Which Ones?		

06. Below, eight possible interests that could work as “drivers” to the development of Corporate Responsibility Clusters in the region are presented. Please, place the interests in order of importance and justify your 1st and 2nd options (why would these two interests be the most important ones?)

Co-operative work among the groups interested (e.g.: assemblers, suppliers), which could mean savings in investments and risk sharing. ()	Quality and productivity improvements through the co-operative work. ()	Market niche that places value on eco-features of products. ()
Corporate image (social and environmental marketing). ()	Cost management improvements, through environmental management and higher efficiency. ()	Logistics management improvements through a co-operative work among the groups interested. ()
Human capital development through better human resource management. ()	Improve access to capital (Ethical Funds) through better governance ()	Other factors? Which ones?

Please, justify the 1st and 2nd options:

07. In your opinion, what or which factor(s) could influence most effectively the development of Corporate Responsibility Clusters to increase the use of autoparts made of natural fibers?

- () Innovative companies which invest in social and environmental management.
- () Public policy that imposes statutory compliance and fiscal measures, as a means of improving corporate responsibility standards.
- () Multi-sectorial partnerships to support competitiveness through the supply chain.

08. With regard to the options mentioned below, which could be easiest one for the assemblers aiming at using natural fibers? Why?

- a) to use Pará's structure (e.g.: suppliers of fibers, co-operatives, etc.)
- b) to keep working with its own suppliers
- c) to support the formation of local supplier networks

09. What sort of governmental policies would be required to support the formation of Corporate Responsibility Clusters in different sectors? What sort of policies would be required in the auto-motive sector? How could the Sustainable Amazon Programme contribute to it?

10. Which are the perspectives to the fiber market?

Annex 8 – Letter + Questionnaire Sent to Organisations (Original in Portuguese)



Universität Bremen

Universität Bremen
Lehrstuhl für Allgemeine Betriebswirtschaftslehre
Produktionswirtschaft und Industriebetriebslehre

Kátia Madruga
WING-Gebäude
Wilhelm-Herbst-Str 12
Raum 008
D-28359 Bremen

Prezados Senhores,.

Pela presente, estou encaminhando-lhes um questionário que faz parte da minha pesquisa de doutorado na área de Administração de Empresas que está sendo realizada na Universidade de Bremen na Alemanha.

O título da pesquisa é: “Potencial para Agrupamentos de Responsabilidade Corporativa em uma Região de Floresta Tropical - Componentes Feitos de Fibras Naturais no Brasil”.

A investigação baseia-se na teoria sobre “Clusters de Responsabilidade Corporativa”, sugerida por especialistas de dois centros de pesquisa - “The Copenhagen Centre” e “Accountability”. De acordo com esses especialistas, empresas e grupos de interesse (ex: governos, firmas, ONGS) podem trabalhar de forma cooperativa com foco na gestão da responsabilidade social, o que trará efeitos sobre a competitividade e o desenvolvimento sustentável das empresas e da região.

O **objetivo** da pesquisa de doutorado é desenvolver uma estrutura teórica sobre os possíveis fatores que podem influenciar parcerias estratégicas entre organizações ou em futuros arranjos de agrupamentos de responsabilidade corporativa. Mais especificamente, a pesquisa objetiva identificar os fatores que podem potencializar a formação de “Agrupamentos de Responsabilidade Corporativa no Pará”, visando a promover a utilização do uso de fibras naturais no setor automotivo.

As suas respostas ao questionário até **28.03.2004** irão colaborar para a continuidade da pesquisa. Os resultados finais serão publicados em outubro de 2004, e, se houver interesse, uma cópia dos mesmos pode ser enviada a V. Sas.

Agradeço antecipadamente pela sua colaboração e apoio,

Kátia Madruga

**Potencial para Agrupamentos de Responsabilidade Corporativa em uma Região de Floresta Tropical
- Componentes Feitos de Fibras Naturais no Brasil -**

Nome da Corporação/Instituição:

Nome do (s) Respondente (s):

Cargo (s) Seção (ões) ou Departamento(s) ao (s) qual (is) pertence (m):

E-mail (s):

Endereço:

Telefone:

Certificações (Meio Ambiente/Responsabilidade Social):

Por gentileza, explique que tipo de objetivos e responsabilidade da urbanização?

01. A seguir, são mencionadas 14 instituições que poderiam influenciar no processo de formação de “Agrupamentos de Responsabilidade Corporativa” no Estado do Pará para promover o aumento do uso de fibras naturais em componentes automotivos. Por favor, numere os itens de acordo com o seu critério de importância e justifique as opções número **01** e **02** (por que **essas duas** organizações ou grupos seriam os mais importantes?):

Montadoras ()	Governo Federal ()	Governo Estadual ()
Fornecedores de Componentes ()	Fornecedores de Fibra Bruta ()	Fornecedores de Fibra Processada ()
Organizações Não Governamentais ()	Universidade Local (Projeto POEMA) ()	Pron-Amazon ()
POEMAR ()	POEMACOOOP ()	Bolsa Amazônia ()
Associação Nacional dos Fabricantes de Veículos Automotores – ANFAVEA ()	Sindicato Nacional da Indústria de Componentes para Veículos Automotores – SINDIPECAS ()	Outras Instituições () Qual (is) Por quê?

Opções **01** e **02** e motivos:

02. A seguir, são mencionadas **11 possíveis dificuldades** associadas à utilização de fibras naturais. Por favor, numere os itens de acordo com o seu critério de importância e justifique as opções números **01** e **02** (por que essas seriam as principais dificuldades enfrentadas?):

Tecnologia apropriada ()	Custos (investimentos em pesquisa e desenvolvimento/ máquinas/logística) ()	Padronização ()	Trabalho cooperativo com os fornecedores de componentes ()
Escala de produção ()	Recursos humanos não capacitados ()	Acesso aos fornecedores de fibras brutas ()	Acesso aos fornecedores de fibras processadas ()
Falta de apoio financeiro ()	Controle logístico para garantir a gestão da responsabilidade social e ambiental ao longo da cadeia ()	Falta de incentivos governamentais ()	Outras dificuldades ? Quais? ()

Opções **01** e **02** e motivos:

03. A seguir, são mencionados **10 fatores** que poderiam dificultar ou impedir a formação de “Agrupamentos de Responsabilidade Corporativa” para o uso de fibras naturais. Por favor, numere por ordem de importância e justifique as opções números **01** e **02** (por que esses dois fatores seriam os que mais dificultariam a formação dos grupamentos?).

Distância (o Pará está distante dos pólos tradicionais de produção automotiva: Sudeste e Sul) ()	Concorrência entre as montadoras, dificultando o trabalho em conjunto. ()	Falta de interesse ou incentivo (ex: por parte das montadoras, governos) para o desenvolvimento de redes de fornecedores locais ()
A cooperação entre as diversas partes interessadas (ex: governo, montadoras, pequenos fornecedores) ()	A falta de políticas públicas adequadas ()	A falta de estratégias empresariais adequadas ()
A falta de capacidade técnica dos produtores locais ()	A falta de suporte técnico e financeiro aos pequenos produtores rurais ()	A falta de uma estrutura local apropriada (ex: rodovias, fornecedores suficientes) ()
Falta de uma linha de conduta que possa regular as práticas relativas à responsabilidade social e ambiental empresarial. ()		

Opções **01 e 02** e motivos:

04. Na sua opinião, que tipo de problemas (ex: escala, qualidade, custos) poderiam ser resolvidos se os diversos grupos de interesse (ex: governo, montadoras, associações setoriais) trabalhassem juntos, visando à gestão da responsabilidade social e à competitividade?

05. Aparentemente, o Estado do Pará apresenta uma estrutura (ver tabela abaixo) que poderia colaborar para a formação de “Agrupamentos de Responsabilidade Corporativa”. Na sua opinião, que tipo de capacidades esses atores já oferecem ou que tipo de necessidades deveriam ser atendidas para promover o uso de materiais naturais para o Setor Automotivo? Existem outros atores na região que também poderiam colaborar? Quais?

Atores	Capacidades	Necessidades
Produtores de Fibras		
Cooperativa de Produtores/Refinadores de Fibras		
POEMAR		
POEMACOOOP		
POEMAtec Comércio de Tecnologia Sustentável para a Amazônia		
Bolsa Amazônica		
Pron-Amazon		
Outros Atores (?)		

06. A seguir, são apresentados **08** possíveis interesses que poderiam alavancar ou motivar a formação de Agrupamentos de Responsabilidade Corporativa na região. Por favor, numere-os por ordem de importância e justifique os números **01** e **02** (por que esses interesses seriam os mais importantes?)

Trabalho co-operativo entre diversas partes interessadas (ex: montadoras, fornecedores) poderia significar a redução dos custos e a divisão dos riscos do investimento. ()	Aumento da produtividade e da qualidade através do trabalho cooperativo ()	Nicho de mercado que valoriza produtos ecológicos ()
Imagem corporativa (Marketing Social e Ambiental) ()	Melhoria na gestão de custos, através do melhoramento da gestão ambiental e aumento da eficiência. ()	Melhoria na gestão da logística através do trabalho em conjunto com as partes interessadas. ()
Desenvolvimento do capital humano com uma gestão de recursos humanos mais eficaz. ()	Acesso ao capital (ex: Fundos Éticos) por meio de melhores práticas de governança corporativa ()	Outros fatores. Quais?

Opções 01 e 02 e motivos:

07. Na sua opinião, qual ou quais elemento(s) pode(m), efetivamente, influenciar na formação de “Agrupamentos de Responsabilidade Corporativa” no caso da produção de fibras naturais para o setor automotivo e por quê?

- () Empresas líderes e inovadoras na Gestão Ambiental e Social
- () Políticas Públicas que impõem medidas legais e fiscais para melhorar padrões e práticas de responsabilidade corporativa
- () Parcerias multissetoriais que possam causar efeitos sobre a competitividade ao longo da cadeia produtiva.

08. Na sua opinião, o que é mais fácil (visando à formação de Agrupamentos) para as montadoras interessadas em utilizar fibras naturais? Por quê?

- d) utilizar a “estrutura já existente” (ex: fornecedores, cooperativas, etc.)
- e) trabalhar com seus próprios fornecedores
- f) apoiar a formação de novos fornecedores

09. Que tipos de políticas governamentais seriam necessários para fomentar a formação de Agrupamentos de Responsabilidade Social de um modo geral e, especificamente, para promover o uso de fibras naturais na produção de componentes para o setor automotivo? Como o Programa Amazônia Sustentável (PAS) ou outros programas governamentais poderiam colaborar?

10. Quais são as futuras perspectivas para o mercado de fibras?

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