

UNIVERSITÉ DU QUÉBEC À MONTRÉAL

USING PUBLIC-PRIVATE PARTNERSHIPS IN SUSTAINABLE DEVELOPMENT
PROJECTS BETWEEN THE CITY AND THE LARGE INDUSTRY:
BIOGAS VÄST, A SWEDISH STUDY CASE

MASTER THESIS IN URBAN STUDIES



(Two bi-fuel Volvo, property of Göteborg City)

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Dedicated to my brother Guido,
who passed along his passion for Volvo to me
and whose passion includes also Sweden.
(1954/2007)

ACKNOWLEDGMENTS

In the summer of 2004, I wanted to get a better understanding of the joint environmental initiatives between Volvo and its cradle city, Göteborg, in Sweden. I went to Göteborg and met a city officer responsible for the environmental questions. Also present at the meeting was Göran Värmbj, coordinator of the environmental section at Business Region Gothenburg (BRG), who explained to me what the Biogas Väst project. It seemed to be an interesting example of a public-private partnership between a multinational large-scale industry and the local authorities with a basis of sustainable development. In 2005, I published many mainstream articles on the subject but decided to use it as a study case to find out if public-private partnerships can be used in a context of sustainable development.

My thanks go first to my thesis directors, Winnie Frohn and Line Ricard, which agreed to guide me through the research and writing my thesis with an infinite patience under peculiar conditions. They were of much help to force me to structure my thoughts and channel my passion for the subject.

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*«Unless we, in our industries,
are helping to solve the social problem,
we are not doing our principal work.»*

Henry Ford, My Life and Work, 1922

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LIST OF ABBREVIATIONS AND ACRONYMS

AB Volvo	The Volvo group; includes all Volvo products to the exception of cars ¹ (Volvo Car Corporation). When Volvo is mentioned without its extension in the research, it means both AB Volvo and Volvo Car Corporation.
AAPPQ	Association of Québec Architects in private practice
A21L	Local Agenda 21: Local action plan in sustainable development that comes from the 1992 World Summit in Rio
<i>Bi-fuel</i>	Cars with a double reservoir (petrol and biogas/natural gas)
BOT	Build-Operate-Transfer (contractual PPP)
BRG	Business Region Göteborg
CERES	Coalition for Environmentally Responsible Economics
CCQ	Québec Council of Cooperatives
CPQ	Québec Business Council
CSN	National Union Council (Québec)
CSQ	Québec Union Council
ENGVA	European Natural Gas Vehicles Association”
FAO	Food Administration Organization”
FORD	Ford Motor Company
GP	Göteborg Posten (quotidien de la région métropolitaine de Göteborg)
GRI	Global Report Initiative
ICLEI	International Council for Local Environmental Initiatives
IEA	International Energy Agency (OECD division)
IPPR	Institute for Public Policies (England)
LIFT	Local Improvement Finance Trust (contractual PPP)
LRF	Lantbrukarnas Riksförbund (Swedish Federation of Farmers)

¹ Voir page 68 pour les détails des divers secteurs de AB Volvo et de la division PAG de Ford Motor Company.

OECD	Organization of Economic Co-operation and Development
WHO	World Health Organization
NGO	Non governmental Organization
«Ordförande»	<i>City Executive Committee Chairman</i> ; function in Sweden that is similar to a mayor in Québec (but not in Sweden)
UN	United Nations
SME	Small and Medium Enterprises
PPP	Public-Private Partnership
PFI	Private Finance Initiative (contractual PPP)
UNEP	United Nations Environmental Program
Rio 1992	Second UN Conference on Development and Environment in Rio de Janeiro, Brazil in 1992
CSR	Corporate Social Responsibility
CUPE	Canadian Union of Public Employees
“Stakeholder“	End-users or clients, people from whom requirements will be drawn, people who will influence the design and, ultimately, the people who will reap the benefits of your completed project.
Volvo Car Corp.	Property of Ford Motor Company since 1999. When Volvo is mentioned without its extension in the research, it means both AB Volvo and Volvo Car Corporation.
WBCSD	“World Business Council on Sustainable Development”
WWF	“World Wild Fund”
EU	European Union
IUCN	International Union for the Conservation of Nature

LIST OF MEASURING UNITS

Mile	The Swedish «mile» is 10 km
SEK	The Swedish Crown is equivalent of 0,15 CAN \$; 1 CDN \$ is worth 6,53 Swedish Crowns (December 2007)

ABSTRACT

The objective of this research is to assess the validity for the City and its large industry of using public-private partnerships (PPP) as sustainable business models in a context of international competitiveness where their interdependence can have an impact on their world positioning. If the concept of public-private partnership can be interpreted in various ways and may take many forms, the research has found that they can be classified in two categories, called in this research *contract* PPPs and *consensus* PPPs.

The concept of *Sustainable development* can also be understood in various ways but the most common definitions is a combined version of the IUCN (1980) and the UN Brundtland Commission (1987) versions. The research has also found that public and private partners get involved in different ways to achieve sustainable development, depending on their responsibilities and their interests.

In order to define if PPPs can be sustainable, the methodology used in the research is the study case. Based on Biogas Väst, a public-private partnership between the Swedish city of Göteborg, Volvo AB and Volvo Car Corporation, but including also 15 other public and semi-private partners, the hypothesis is to the effect that civil society members (including citizens) must be included for those PPPs to be sustainable.

Results seem to indicate that PPPs can be sustainable even when civil society members or citizens are not included if the project has been identified as a tool to reach sustainable goals defined by a Local Agenda 21 or a local version of the Ålborg Charter. But including civil society members and raising citizens' awareness on these projects can be helpful since citizens and NGOs can act both as political actors and consumers to support such projects. This support can become valuable on international markets where sustainable development products and markets are not yet recognized for their environmental and social values but only for their market value.

19 interviews have been conducted to get a better understanding of the concept of PPPs themselves while studying the interest for both the City and the large industry to get involved in such partnerships. The results seem to indicate that the interdependence between the City and its large industry favours the use of PPP when the objective of the project is to reinforce a common positioning at the world level, when networks are well-established and if there is a high level of trust. On the other hand, these local assets can make it more difficult to export such PPPs in different local contexts, at least without adaptation.

One of the main findings is that *contract* PPPs and *sustainable consensus* PPPs have very different structures and vision; they both need to be acknowledged but also distinguished one from the other. While most *contract* PPPs are formal business contracts, *consensus* PPPs could be used both by public and private partners to rethink business models in favour of good *corporate citizen* practices so that more sustainable production and consumption modes become assets instead of hindering business profitability. Growing complexity in the interaction of social, environmental and economic issues seem to support their emergence as sustainable business solutions, both at the local and international levels.

Keywords: public-private partnerships, Local Agenda 21, Ålborg Charter, sustainable development, post-industrial cities, Göteborg, Sweden, Volvo, biofuel, biogas.

INTRODUCTION

Public-private partnerships (PPP) have existed for a long time and under various forms in several countries such as Canada, France and England. Some governments consider that the PPP constitute suitable economic tools to carry out major projects of infrastructures such as motorways or hospitals (Clark, 2005; Ruane, 2005). Partnerships public-private are also concluded by the cities to delegate management of services in fields such as water, cultural infrastructures, public transport or energy services (Sansfaçon, 2004; Economic Institute of Montreal, 2003). In Québec, the French province of Canada, since its election in 2003, the Liberal Party has been pressuring municipalities to consider PPPs, (Lévesque, 2004).

According to Brinkerhoff and Brinkerhoff (2002), public authorities might use PPPs if they are convinced that market forces resolve problems and want to downsize the State “machine” while increasing its efficiency. Others claim that, far from being a solution, this downsizing creates other problems, such as a transfer of public expertise and jobs to the private sector (Wilson, 2002).

Within the framework of this research, PPPs that are used to delegate tasks from the public sector to the private sector in a hierarchical vision (vertical) will be qualified as *contract* PPPs while those concluded in collaboration with various partners in a less hierarchical vision (horizontal) will be qualified as *consensus* PPPs. If those two types both aim at carrying out various governmental mandates of public services such as road building and other public services, the structure of the partnership, the relationship between partners and the goals are quite different. Whether one is for or against PPP's, the concept of public-private partnership takes more and more importance with various types of governments, including municipalities.

Apart from public-partner partnerships, there is another trend emerging in urban management, which is the will for municipalities to become more sustainable. Following the publication of the 1987 UN Commission Report on the Environment

and the Development, commonly called the Brundtland Report, the concept of sustainable development has been widely diffused, whether by public authorities at all levels or enterprises, more specifically after international meetings on sustainable development such as 1992 UN Rio Summit (Thuillier, 2005). A great number of national, regional or local administrations have since tried to integrate principles of sustainability into their daily management and development. In order for those authorities to turn sustainable development into action, the concept of Local Agenda 21 (LA21) has been developed by people representing 178 countries, many enterprises and civil society organizations at the time of UN Rio Summit. The LA21 makes it possible for public authorities to carry out concrete actions within the realm of sustainable development, according to a philosophy where one must *think globally and act locally* (Thuillier, 2005).

Using public-private partnerships in a sustainable development context while taking into account globalization makes it possible for cities to enter partnerships with the multinational large-scale industries operating on their territory in order to preserve their specific and common advantages (Jensen, 2005). This interdependence is partly due to the obligation to retain highly qualified employees, much in demand, who can select to work in the most attractive cities, renowned for their international character but also for their cultural and environmental dynamism (Sölvell, Zander, Porter, 1999). These criteria while choosing jobs and cities create a situation which favours the emergence of partnerships between cities and private enterprises (Ramonjavelo and Al, 2006).

The work aims at assessing if public-private partnerships can be used in sustainable projects between a city and multinational large-scale industries both facing competitiveness on the global scale.

The methodology used in this work is the study case. The project Biogas Väst, located in the Western area of Sweden, is a public-private partnership between Volvo, the City of Gothenburg and fifteen other public partners. The objective is described as a competitive economic project linking public and private partners' interests in building an innovation market of biogas as biofuel (Bäck, Tedros and Johansson, 2003, Ahlbäck, 2003). The numerous positive impacts on the environment and the society seem to indicate that it could be a sustainable project.

Nevertheless, the absence of the civil society as partners (Bäck, Tedros and Johansson, 2003; Granberg and Von Sidow, 2005), an element considered to be essential in sustainable development planning by some researchers (Thuillier 2005; Gendron and al, 2005, Regéczi, 2005), makes it difficult to categorize the project as sustainable, at least without further analysis. It will be necessary to assess the role of the civil society and the legitimacy of Biogas Väst as a sustainable project.

In Biogas Väst, there is a high level of interdependence between the City and the large industry. Being manufacturers in the field of transport, the private partners face fierce international competition; in this situation, the local environment plays an important part to maintain strategic advantages (Sölvell, Zander, Porter, 1999). This intense competitiveness, coupled with the fact that the car industry is a mature market, is due in part to an increasingly large competition from emerging countries such as China or India (Börjesson and Dahlsten, 2004).

The scientific contribution is that public-private partnerships definition include not only those that are *contractual*, i.e. commercial agreements where public services and duties are delegated to businesses to build and manage motorways, for example, but also those that are *consensual*, where the interests of public and private partners are interrelated. The scientific contribution is also to the effect that concluding such PPPs has advantages both for public and private partners in the context of international competitiveness.

The case study is from Sweden, one of the world leaders in sustainable development (OSKaR, 2003). Moreover, according to comparative studies of the World Economic Forum and the Trend Innovation Chart (a European Union Economic program), Sweden is also one of the most competitive and innovative countries of the World, which is one the main arguments cited to justify PPPs (Leiringer, 2003).

The first chapter of the work clarifies the definitions of *public-private partnership* and *sustainable development*. It questions the type and role of all types of partners, whether public, private or civil society members, both in the realm of *public-private partnerships* and *sustainable development*. The interdependence between the City and the large-scale industries in a context of globalization is also explained, given the impact of this question on the use of public-private partnerships.

In the second chapter, the methodology is described. It explains the arguments behind the use of the case study as a methodological tool and the logistics used to collect and validate the primary and secondary data.

In the third chapter, the case study, Biogas Väst, is detailed: the geopolitical and socio-economic context, a portrait of Sweden in regards to PPPs and Local Agenda 21, an overview of three researches already carried out on the project, a technical description of the project, the structure of the partnership, the partners' objectives and the financial aspects, the various committees created and the follow-up of the project.

The fourth chapter analyses the data collected from the review of literature (chapter 1) and the interviews. A discussion on the results of the analysis as well as a conclusion on the follow-up of the project completes the research.

CHAPTER I

PUBLIC-PRIVATE PARTNERSHIPS AND SUSTAINABLE DEVELOPMENT

*The development of effective partnerships
is an art, not a science.*

Kofi Annan,
Former UN Secretary-General
(Calder, 2003:2)

The first chapter contains a review of the various definitions and typologies of the concept of *public private partnership*. The concept of *sustainable development* are also defined while differences between the way the public sector, the enterprises and civil society members see their role in making sustainable development a reality. This chapter ends with a brief analysis of why public-private partnerships between the City and its large industry are used in a context where interdependency is reinforced by globalization.

1.1 The origins and scope of public-private partnerships: definitions

According to many scholars, public-partnership is not a new concept (Gratias and Boyd, 1995; Hamel, 2007). Diverse forms have existed before, dating even from the Roman Empire (Leiringer, 2003). Without using the term *public-private partnership*, similar management forms have existed before in public transport and electricity services as it has been observed in Montréal (Lévesque, 2004) in the XIX^e century (Chauvière, 2005).

While public-private partnerships have been more common since the '70, both in industrialized and other countries (Ramonjavelo and al, 2006; Le Galès, 1995), Wallis and Dollery (2001) think that these are more common since the 1990s.

Approximating the size of the public-private partnerships phenomenon is complex because data on PPPs is not always available for analysis but also because public-private partnership can imply many definitions (Clark, 2005, Belhocine, Facal and Mazouz, 2005).

Public-private partnerships are used as development tools at the international, national, regional or local levels, for many types of projects, depending on the perception from lobby groups on how the public interest is protected or not. Public-private partnerships are seen as a win-win situation by some institutions such as the World Bank and the OECD (Wettenhall, 2003). PPPs are often seen as an solution when the government wants to contribute with private partners in creating and maintaining jobs on site, while benefiting from the private expertise, seen as more up-to-date and competitive (Brinkerhoff, 2002). According to some researchers, PPPs could be used to solve major problems related to sustainable development and overall economic development in general (Belhocine, Facal and Mazouz, 2005) which makes the actual research even more valuable.

Business lobbies such as the World Business Council on Sustainable Development (WBCSD) are in favour of PPPs. On the other hand, various groups defending worker's rights such as Positively Public and Unison in the UK, or Canadian/Québec unions (CSN, CSQ, SCFP) denounce the use of public-private partnerships because of its negative impact on workers and loss of transparency from governments (CSN, 2004; Danis, 2004, Wilson, 2002; SCFP, 2004). If some public organizations such as the PPP Commission from the IPPR, in England, are well aware that many PPPs have failed in the UK, they still believe that they are essential to improve public services (IPPR, 2001).

Because the concept of PPP is strongly politicized, governments and businesses tend to see PPPs as successes (CPQ, 2005; IPPR, 2001) while many civil society groups consider them as failures (Rioux, 2006; CSN, 2004; CSQ, 2004; Danis, 2004). In fact, it might be complex to guess if a PPP was a success or a failure

depending on the way one judges it (Borins, 2001) but also because one must first define if the success is based on the partnership itself or on the results (Brinkerhoff, 2002).

In order to be able to define if they constitute a solution or a problem to public management, the expression “public-private partnerships” has to be defined.

1.1.1 Some definitions and typologies of *public-private partnership*

In order to define if public-private partnerships can be used in sustainable development projects, the various meanings of the term *public private partnership* have to be explained and that can be done both with definitions and typologies. *Definitions* are used to understand the meaning of a specific word or expression, according to its usual sense. *Typologies* make it possible to understand the meaning of a specific word or expression by classifying them according to similarities or differences with various types.

1.1.1.1. Definitions

One of the reasons that can explain the political polarization around PPPs as a management tool is the absence of consensus on a sole meaning for the expression *public-private partnership*. According to Bernier (2005), the definition of the term *partnership* depends on various factors:

The term *partnership* can relate to various realities whose realm and ambition are very diverse and varies from country to country, from different time periods, from governing ideologies and, mostly, from society views of the public services. (Bernier 2005:80, *translated by the researcher*)

According to Gagnon and Klein «The notion of *partnership* tends to become more important in literature on development, more specifically in local development.» (1991:240). These researchers argue that the term *partnership* is usually described rather than defined.

Table 1.1 contains 10 definitions of the expression *public-private partnership* as divided in two main categories: those that define the **expression** *public-private partnership* in itself and those that define *partnership* between entities, including *public* and *private* partners. On top of the table is the Brinkerhoff definition, which includes a definition that sums up both categories.

Table 1.1 Public-private partnership definitions²

Dynamic relationship among diverse actors, based on mutually agreed objectives, pursued through a shared understanding of the most rational division of labour based on the respective comparative advantages of each partner. Partnership encompasses mutual influence, with a careful balance between synergy and respective autonomy, which incorporates mutual respect, equal participation in decision making, mutual accountability and transparency. (Brinkerhoff, 2002 :21)		
	INSTITUTION	DEFINITION
DEFINITIONS OF «PUBLIC-PRIVATE PARTNERSHIP»		
1	Office de la Langue française (2007) (public authority protecting the French language in Québec)	In a general way, a public-private partnership related to the use of private resources and expertise in the public domain.
2	Government of Québec (2007)	Long term contract in which a public authority associate itself with a private enterprise, with or without private money for the conception, the realization and the maintenance of public infrastructure.
3	Québec's Institute of PPP (2007)	Cooperation between the public and the private sectors in order to offer a public service in which each part brings their contribution and share risks and benefits.
4	Business Partnerships Bureau (2007)	Contract between public and private partners which states results to be reached in order to improve the offer of public services.
5	Canadian Council of Public-Private Societies (2007)	Cooperation enterprise between the public and the private sectors, entre le secteur public and le secteur privé, founded on know-how of each partner and that answers best to public needs by clearly defining resource, risks and benefit sharing, according to an appropriate method.
DEFINITIONS OF «PARTNERSHIPS» BETWEEN THE PUBLIC AND PRIVATE SECTORS		
6	Nordic Partnerships	Co-operation between different actors on solving common problems for a common benefit – and common solutions are often seen as more beneficial and longer-enduring than individual ones.
7	Proulx, Bourque and Savard (2005)	Equal and fair relationship between two different partners who bring different contributions that are both deemed essential. This type of partnership is thus based on mutual respect and awareness for the contributions of those involved by interdependence.
8	World Resource Institute (Nelson, Zadek:2000)	Voluntary and collaborative effort among businesses, non profit groups, and government agencies working on a sustained basis to address a challenge that is important to all the parties.
9	Ashridge Centre for Business and Society (ibid.)	Acting together by contributing their diverse resources to pursue a common vision with clearly defined goals and objectives. The objective of a partnership should be to deliver more than the sum of the individual parts
10	Copenhagen Centre (ibid.)	Engage in voluntary, mutually beneficial, innovative relationships to address common societal aims through combining their resources and competencies

² The underlining is from the researcher.

According to the New Public Management ideology (Belhocine, Facal and Mazouz, 2005), the first category of definitions (1-5) includes criteria and limits in the relationship between the public and private sectors when the first one transfers to the second one the task of some public responsibilities. Only two of those definitions clearly state that PPPs are *contractual deals* (Québec Government and Business Partnership Bureau) but all those definitions include the mention of *public services*. The expression *public-private partnership* must be seen as a whole and not like three different concepts used together (*partnership, public, private*). In this research, those partnerships will be called *contract PPP* because they usually include detailed contracts.

The second category (5-10) defines the concept of *partnership* as an approach. These definitions include notions such as *equality* and *interdependence* (Bernier, 2005), the partners' *will* to collaborate (World Resource Institute), to *solve* common problems (Nordic Partnerships, World Resource Institute, Copenhagen Center) or a statement to the effect that the results reached together would be more successful than the results that each partner could have obtained on its own (Nordic Partnerships, Ashridge Center for Business and Society). Resource and competence sharing is also mentioned. In this research, the term *consensus PPP* will be used in order to put the emphasis on a relationship with less hierarchy between partners.

Regarding *contract PPPs*, rather than using the expression *public-private partnerships*, many other terms or expressions could define more precisely these business deals. According to Wilson (2002), the expressions *BOT* (Built Operate Transfer) or *PFI* (Private Finance Initiative) are more appropriate, so why not using these terms instead? Some researchers argue that the expression includes the word *partnership* that refers to the positive perception of *mutual benefits* and *cooperation* (Danis, 2004) and unions tend to think that this expression is used to hide the government decision to *subcontract* (Proulx and al, 2005) and *privatize* (CCQ, 2004; CSN 2004; Regéczi 2005). The Office de la Langue française du Québec (OLF, 2007) also defines *public-private partnerships* as synonyms of *privatization* while the Government of Québec disagrees with that definition.

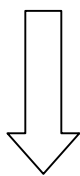
The same two categories of the expression *public-private partnership* as *contract PPPs* and *consensus PPPs* can be also found in typologies.

1.1.1.2 Typologies

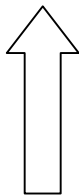
While some researchers argue that creating a typology of *public-private partnerships* is impossible or at least limited (Le Cren, Boutin, 2004; Danis, 2004), attempts have been made at a classification. The typologies analyzed in this research come from Le Cren and Boutin (2004), Belhocine, Facal and Mazouz (2005), Regéczi (2005) and Proulx, Bourque and Savard (2005). While they use different rationalities, most of these typologies can be placed on an axis, based on characteristics such as the level of hierarchy, trust and the inclusion of civil society members.

Le Cren and Boutin (2004)

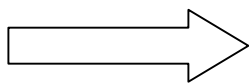
Le Cren and Boutin argue that *partnerships* can be classified by the level of power sharing between partners available or their type of relationships.



Some partnerships are *institutionalized (top down approach)* and highly hierarchic, where public partners are in command and private partners offer their services. This is the case for major infrastructure projects (i.e. highways, hospitals). This type usually falls in the category of *contract PPPs*.



Some partnerships are *decentralised or field projects (bottom-up approach)* as they emerge from the needs defined by local groups and not from the public partner. The success of such partnerships partially depends on those local groups.



The *combined partnership (horizontal approach)* is a mix of the two other approaches, in a context where a common vision, common objectives and power are shared between partners. This type can fall in the category of *consensus PPPs*.

The other typology from Le Cren and Boutin is based on the types of relationships between partners. *Service partnership* is used when a partner borrows employees from another partner, such as in the Public Finance Initiative (PFI) in England. The *opportunistic partnership* is based on political considerations; behind those positive words lie an uneven relationship between partners. This partnership is based on an

exchange of services, in a situation where one of the partners has considerably more power than the other. An example of this type of PPP is a project where the national Government and community groups work together.

Reciprocity partnerships do not involve hierarchy and partners are committed from the beginning to the end of the process. While it is seen as the most interesting type of partnership by some authors (Landry and Serre, 1994, in Le Cren and Boutin), it is often considered an *utopia* that can be complex to achieve, especially in a context of competitiveness.

Belhocine, Facal and Mazouz (2005)

Belhocine, Facal and Mazouz's typology refers to projects. PPPs are classified according to their relative capability in creating projects (weak or strong); this depends on the public managers' capacity to answer the needs of their population.

The expression *Random partnership* is used to describe the relationship between a public partner who wants to do projects and a private partner with the specific expertise that is needed for success. While the public partner usually has the first idea, the partnership between both types of partners often starts at the beginning when objectives, implementation and follow-up criteria are being set up. It is still a relationship with some hierarchy; the public partner is the one in commands and can impose the internal (management) and external (regulation) boundaries in order to meet its responsibilities. That partnership does not consider partners' own values and philosophy but the potential success in creating such projects is strong because the public partners keep the control of the PPP; nonetheless, such projects require close attention when the contract between public and private partners is written. (Belhocine, Facal and Mazouz, 2005:15)

The *elementary partnership* refers to a delegation of public services to the private sector. All the decisions are taken by the public partner; it is mostly an economic partnership where the goal is to obtain greater efficiency to deliver public services at a lower cost possible. The potential to create such projects is also strong because these PPP depend mostly on the public partner in a strong hierarchical that does not include value or philosophy sharing.

On the other hand, the *symbiotic partnership* involves common values, *missions and goals* (Belhocine, Facal and Mazouz, 2005:7). The potential to generate projects is thus weaker because it depends on a delicate balance between the public and private partners and the capacity to work together with very different organization culture. This type of partnership is based on equal power and responsibilities, for example between the State and the community sector. The objective is to reach common goals: the State provides funds and the private partner from civil society offers its field services (ex: job search community groups). In this case, there is a very strong interdependence between partners where all partners have some interest in minimizing conflicts and cultural differences between the public and private environments.

The *prospective* PPP is a tool for public partners wanting to position themselves at the regional, national or supranational levels in very strategic sectors where the expertise comes from the private sector. Strongly linked with innovation markets, the potential of generating projects is weaker because it depends on the balance of forces between the public and private partners. The public sector either give financial support or delegate the mandate to the private sector to realize specific projects that position both partners in highly strategic sectors such as biotechnologies or communications. That type of PPP raises ethical concerns since the relationship between public and private partners become privileged, so that there is a risk of an overwhelming influence from the private sector; the advantages for the population are also sometimes hard to define.

According to these authors, the potential to conclude partnerships is reduced when risks increase because of a greater power balance (*symbiotic*) or when innovation plays a strong role (*prospective*). Other researchers disagree, arguing that interdependence is a key factor in the success of PPPs (Ramonjavelo and al., 2006).

Regéczi (2005)

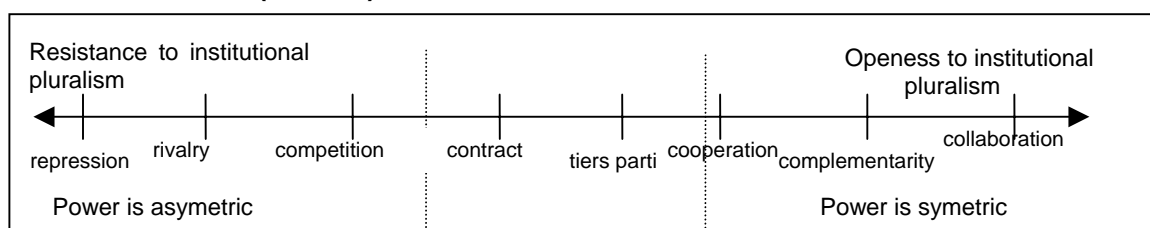
This author has classified *public-private partnerships* in two main categories. The *market-oriented*, PPPs are projects elaborated from the public sector in a corporate management context; in the *network-oriented* PPPs, many partners are included in the decisions. *Market-oriented* partnerships are not equal since the public partners does not share its power, like in the context of public administration management while *network-oriented* PPPs are more balanced and would be more transparent and innovative (Regéczi, 2005).

If Regéczi's typology has some similarities with the *contract* and *consensus* categories as defined in this research, there is an important difference: the researcher does not take into account *market-oriented* projects that include many partners (*network-oriented* projects).

Proulx, Bourque and Savard (2005)

These researchers use the Coston axis, which is based on the level of openness from the public partner to share its power with its partners, as seen in figure 1.1.

Figure 1.1 The axis of relationships between the government and the third sector (Coston)



Source : Proulx and al. 2005:9.

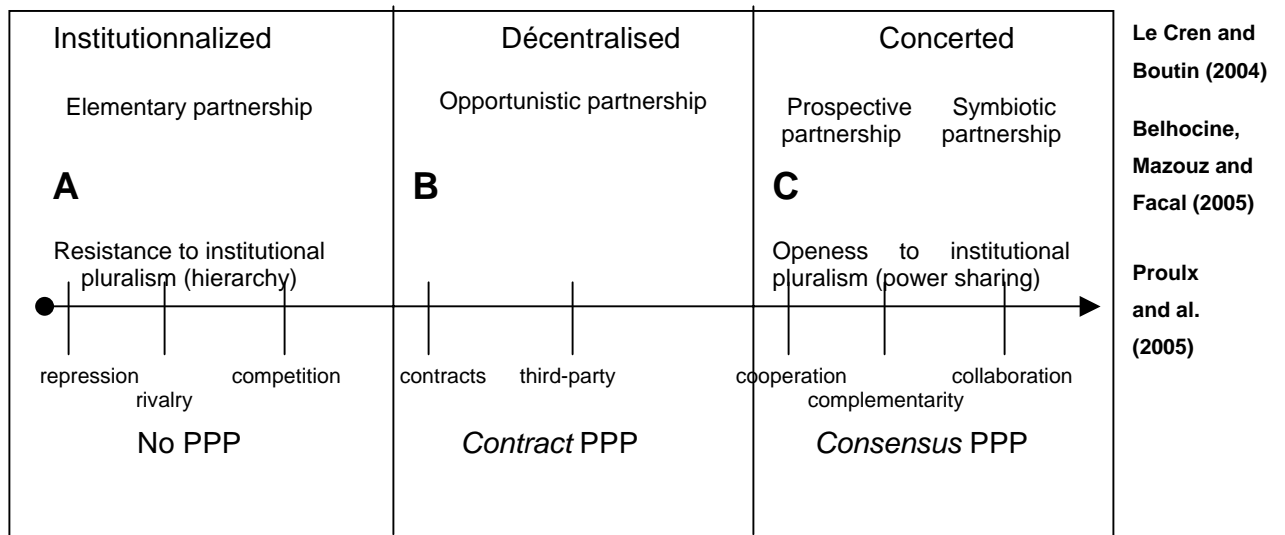
Used to define relationships between the State and the third sector (community groups and NGO's), this axis is useful to classify partnerships according to the level of sharing the State allows with its partners, from repression to collaboration. The more the State is powerful and the higher the third sector depends on it; the more open the State is and the more values, philosophy and objectives are shared. Using such an axis to define is useful because it can include the other typology that have been described in this research, as seen in figure 1.2. The three typologies share

the same model of growing levels of power, values, philosophy and goal sharing between the partners.

In section A, the Government does not share any of its power (Wilson, 2002:14). The role of each partner, public, private or civil society member, is well-defined without being questioned. If public-private partnerships cannot emerge in this type of management, the situation changes when the private partners, and sometimes the civil society, get more power, in a less hierarchical vision from the public partner.

Contract PPPs will become possible when the public partner delegates some of its responsibilities to private partners by contract (section B) or when partners become more equal (section C). As the level of power varies according to its location on the axis of hierarchy, it is worth mentioning that it might become difficult to assess which PPP's category a project falls into.

Figure 1.2 The axis of studied typologies (synthesis)

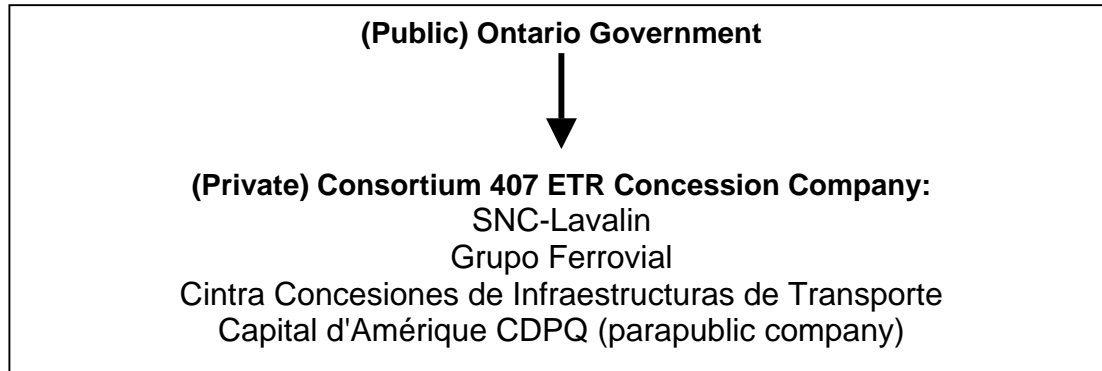


Mostly used for the building and management of public infrastructures and public services, *contract PPPs* are usually defined by the public partner (it can be one or many levels of governments together) with a private consortium (that can include many enterprises). The contract linking those partners is fully detailed, regarding to mandates, tasks, risks, benefits, building and management deadlines and finally, the contract deadline itself. According to Hamel, some of these contracts are more than a 1000 pages long and the choice of using such PPP is not mandatory but a political choice (Hamel, 2007; Hultkrantz, Karlström and Nilsson, (2005).

According to Le Cren and Boutin (2004), projects where there is unequal power between the partners cannot be called *partnerships*: «This partnership characteristic [equality between partners] is tantamount because it seems that partners, in numerous study cases, feel that they must begin at the same level.» (2004:23)

Figure 1.3 is an example of a *contract PPP* project, the building and management of a strip of the Highway 407 in Toronto, Ontario, Canada. According to Lavallin, one of the main private partners, the private consortium will build and manage the highway until 2098, a 99 year-old period, before it is transferred to the Ontario Government. Cost of the project is 4 billion \$ (Lavallin, 1999).

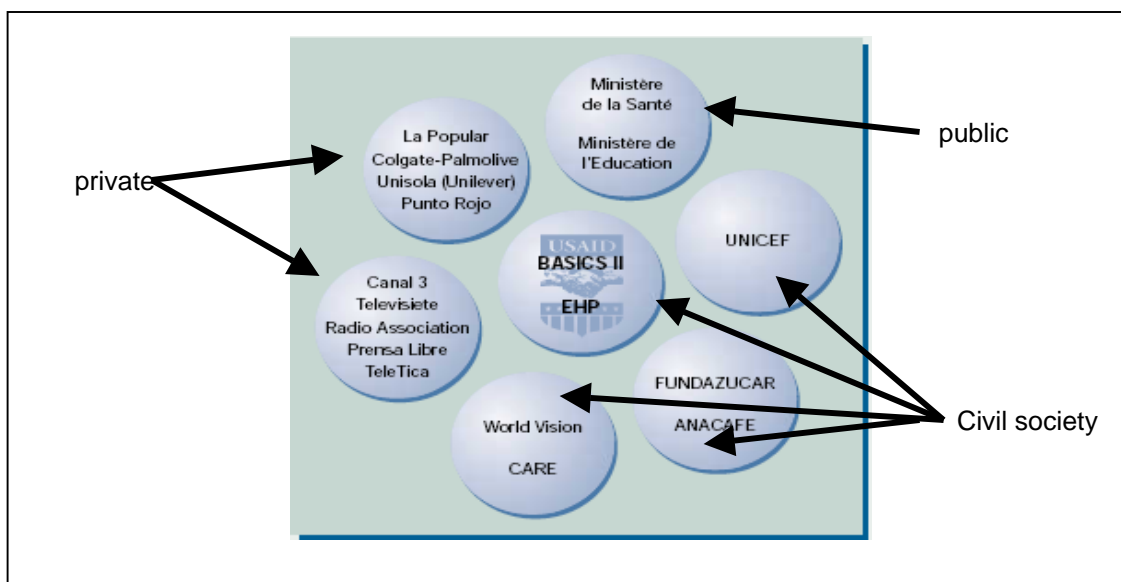
Figure 1.3 An example of a *contract PPP*



The structure of a *consensus PPP* is different. Including public and private partners but with a possibility of also include civil society members on equal footing, *consensus PPPs* are done with less formality and are used when specific expertise and diverse networks are deemed necessary. Used in emerging countries for social services such as health services (Jütting, 1999), this type of PPP can also be used in projects whose objectives are to obtain changes in production or consumption modes (Nordic Partnerships, 2002).

Figure 1.4 describes a public-private partnership that included NGO's to reduce infants' death in four countries from Central America. While the PPP includes many public partners, it has been initiated by an American NGO (USAid) and is managed by private enterprises (La Popular Colgate-Palmolive/Unilever/Punto Rojo). The cost of that *consensus PPP* is a million dollars (Tain and Bendahmane, 2002).

Figure 1.4 An example of a *consensus* PPP



Source : Tain and Bendahmane, 2002:2

As said previously, both the expressions *contract* PPPs and *consensus* PPPs do not come from the review of literature but have been created and used in this research to classify public-private partnerships in order to validate (or not) if they can be used in conformity with sustainable development principles.

Tableau 1.2 The differences between a *contract* and a *consensus* PPP

<i>Contract</i> PPP	<i>Consensus</i> PPP
Project conceived by the public sector <ul style="list-style-type: none"> • Fixed characteristics • Fixed deadlines for building the project and transferring it back to the public sector 	Development or prospective project <ul style="list-style-type: none"> • Evolving tasks and mandates • Variable timeframe
Bidding and contracts	<ul style="list-style-type: none"> • No bidding • With or without contract
Hierarchy controlled by the public sector	Coordination without hierarchy
Public infrastructures and services	Project both with common objectives and specific interests
Public partner(s) and private consortium	Network

In résumé, *contract* PPPs are project where the public sector delegate some of its duties to the private sector while keeping full control of the project; thus the idea to use more precise terms like BOT and PFI or *business deals* instead of *public-private partnerships*. *Consensus* PPPs are usually development projects where public and

private partners try to find common solutions while answering also their specific needs; the structure is less rigid and the conditions are less formal as to allow changes if the evolution of the project needs it.

1.1.2 The definitions and role of public, private and civil society partners

A more equal power between the partners means that the role played by the public, private or civil society members can become more similar (Le Galès, 1995; OMS 2002) so the role of each partner must be explained.

1.1.2.1 The definition of a *public partner*

The term *public* refers to «what is relative to social collectives that are legally constituted» (Le Petit Robert, 1981:1563, *translated by researcher*). The Government of Québec has listed which organization is considered a public one, thus explaining who can be a *public partner* in a PPP. The list includes the government itself, the executive council, the treasury, the ministers, the municipalities and other municipal groups, the schools and education groups under governmental or school coordination, the formal health and social services, the governmental agencies and state departments³, all of them being under the jurisdiction of a government, whether national or local⁴.

1.1.2.2 The definition of a *private partner*

A private partner is an «organization producing goods and services with the objective to sell them.» (Le Petit Robert, 1981:660, *translated by researcher*)

The important distinction between the public and private roles

Since the differences between the public and private sectors can become less obvious and since many public partners tend to adopt business management models as public management models, Haque insists on the importance to define how public a service is, in opposition to being *more or less private* (Haque, 2001). Gratias and Boyd (1995) and the Institute for Public Policy Research also consider that the public partner must stay strong and responsible for the public mandate. Public-private partnerships can be rightly used if the public sector maintains its real power while protecting social equity, improvement of public services and citizens' validation of

³ Pouliot c. Cour du Québec JE 2002-1370 (C.A.M.), 23 juillet 2002.

⁴ Loi sur l'accès à l'information and aux renseignements personnels, Gouvernement du Québec, article 3.

their decision and action. (IPPR, 2001). An even balance of power between public and private partners is seen as a very important issue in public-private partnerships (IPPR, 2001). It has an impact for the public partner to play its role as regulator (Gratias and Boyd, 1995), initiator (Van Malmborg, 2003; Aubert and Patry, 2004) and to be able to support all its citizens (CSN, 2004). A strong public sector can increase the citizens' trust in regards to institutions that represent them (Hubbard, 1995), to make sure that universal access to public services is maintained (CCQ, 2004; IPPR, 2001) but also for evaluation purposes (SCFP, 2005; Gouldson and Sullivan, 2006).

A strong public sector is needed in order to maintain a global vision of the society (Haque, 2001) while protecting the common interest i.e. «the whole set of values that are widely shared within the society» (Simard and al. 2004, *translated by the researcher*). According to Regézi, citizen trust is also an essential factor of success in public-private partnerships (2005).

Reinforcing the public sector role as being responsible for the common good can have a strong impact on public trust (Haque, 2001) and on the balance of power and influence between the public and private sectors in PPPs.

1.1.2.3 The definition and role of civil society

There are many definitions of the expression *civil society*. For the UN, civil society is «*all legal entities, whether national, regional or international, other than federal governments and international organizations*⁵», which includes businesses and non-federal governments such as Québec, but not the population in general. In some of UN structures, such as the Secrétariat du Sommet mondial sur la société de l'information, the UN includes enterprises and private organizations in its definition of *civil society*⁶. The World Bank definition does not include the population and the private sector but includes worker's unions. According to them, organizations found in *civil society* are:

...a wide array of non-governmental and not-for-profit organizations that have a presence in public life, expressing the interests and values of their members or others, based on ethical, cultural, political, scientific, religious or

⁵ www.geneve.ch/smsi/doc/20031204_sc.pdf

⁶ www.geneve.ch/smsi/doc/20031204_sc.pdf

philanthropic considerations. Civil Society Organizations (CSOs) therefore refer to a wide of array of organizations: community groups, non-governmental organizations (NGOs), labour unions, indigenous groups, charitable organizations, faith-based organizations, professional associations, and foundations.⁷

The definition of the World Health Organization (WHO) is probably the most common even if there is no complete consensus on a definition of *civil society*: «*Civil society is usually made of the population in general and occupies a space where the State and the private sector is absent.*⁸» This is the definition used in this research.

In public-private partnerships, the role of civil society members can vary: in *contract PPP*, civil society members play an important role in order to protect the workers' benefits and public access to governmental services (CSN, 2004), to reinforce the public character of State organizations (SCFP, 2005), to put pressure in order to fight purely economic projects (Bisson, 2006), or even to convince international organizations such as the World Bank or the International Monetary Fund to modify its programs in order to include social criteria (Palmuyoki, 2006).

Civil society trust towards public organizations involved in PPPs is mandatory to ensure their legitimacy of representation (Haque, 2001). In many cases, civil society members question the capability of the public partner to be able to negotiate such commercial deals with the private sector without losing ground on common goods when the contracts are kept secret (Wilson, 2002), when there seems to be a lack of will to make sure the terms of the contracts are respected (Hammerschmid, 2005), or because of possible conflicts of interest (Allaire and De Sève, 2004). Since public partners are responsible for the common good, they must make sure that the PPP preserves society's assets by improving transparency, in order for civil society members to keep their faith in the public system. Failing to do so can be costly, at the political level:

If many different partnership agreements with the private sector are taken in secret and weaken the democratic system by the public actor, then those politicians can also pay the price (Le Galès, 1995;74 *translated by the researcher*)

⁷

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/CSO/0..contentMDK:20101499~menuPK:244752~pagePK:20503~piPK:220476~theSitePK:228717,00.html> February 22 2007

⁸ *Comprendre la société civile; enjeux pour l'OMS*, document de synthèse N0. 2 WHO/CSI/2001/DP2 www.who.int

A major factor of success: the trust between partners

According to researchers, trust is one of the main elements in a partnership. Trust must exist between partners who collaborate together in a dynamic and there must be an exchange in both directions (Ramonjavelo and al, 2006; Van Malmborg, 2003). Lafrance and Lehmann argue:

However, real and meaningful partnerships can only be established through development of social relations, through commitment and mutual trust and through establishing mutual understanding and consideration. (Lafrance, Lehmann, 2005:217)

This trust can be strengthened where there is interdependence between partners, for example when long-lasting personal relationships are formed (Ramonjavelo and al, 2006). Risks of reputation damage can also influence the quality of trust between partners (Clark, 2005). As an example, public-private partnership between Unesco and the French oil company Total has been cancelled when Unesco found out that its private partner was part of a consortium with the totalitarian regime of Myanmar (Lafrance, Lehmann, 2005).

In résumé, even if the expression *public-private partnership* can refer to many definitions, it can be classified in two main categories: *contract PPPs*, which are business agreements between the public sector and the private sector, and *consensus PPPs*, where public and private partners work together to build and realize projects with common objectives and specific interests. The public sector is defined as being all forms of government, including its sub-organizations, while the private sector is defined as the enterprise, excluding non-profit enterprises. If the structure of the *contract* PPP tends to exclude *civil society* members, they can be included in *consensus PPPs*. The City and its large industry can get involved in both *contract* and *consensus* PPPs, depending on the needs of each partner and the projects but also on the level of interdependence between the partners.

1.2 The interdependence between the City and the large industry

Public-private partnerships are often used by cities for building road infrastructures but can also be used with the development of innovative market. If this need for innovation is crucial to stay competitive in a globalization context (Emlquist, 2007), municipal and regional governments must also innovate for the same reasons.

(Häggroth, 2000). This forces Cities to position themselves as «World» or «Global Cities» in order to avoid being left aside when it comes to money flows induced by globalization (Hanna and Walton-Roberts, 2004). The production and consuming choices specific to some cities define their position on the World map (Petrovic, 2005). In a *World City*, one can find large finance centers, major transport infrastructures and many multinational enterprises, universities and sciences centers, cultural infrastructures and luxury shops. The World City also hosts international sport events (Jensen, 2005; Hollands and Chatterton, 2002).

These assets increase the advantages of the large industries found in these cities: «There is a general consensus that the home environment has an important impact on the operations and competitiveness of firms and industries...» (Sölvell, Zander and Porter, 1999:11). In a context of international competitiveness, the local and the global are closely linked: (Gagnon and Klein, 1991; Pecqueur, 1994), which is also a characteristic of post-industrial cities: «...places are seen as dependent on the global system and local social action is about positioning within that global system.» (Byrne, 2002:287). That explains why public and private partners are in an interdependent situation which reinforce trust, networking and partnerships since the interests of both public and private partners are dependent. Both the City and the large industry gain at working together, whether to preserve local assets or to position themselves together at the World level.

1.2.1 The quality of life for the City and the large industry

There are four main reasons for the large industry to get involved in improving the local quality of life: the improvement of the industry's overall attractiveness (Gagnon and Klein, 1991), the support of governments to get the infrastructures needed for industrial projects (Gagnon, 1993), the use of a local «laboratory» created by access to local clients for testing and developing new products and finally, better chances to keep its very highly qualified human resources (Sölvell, Zander and Porter, 1993). On the other side, the City benefits from the support of the large industry by keeping jobs and industry taxes but also in getting logistic and financial support for urban projects (cultural, sport and graduate education infrastructures). According to Gagnon and Klein, «an environment with a high quality of life becomes also an

attractive environment whether from the economic or social point of view that benefits citizens and enterprises.» (Gagnon, Klein, 1991:251)

Local environment is important for the large industry because international competitiveness is influenced by specialization factors that grow in local environments:

“Specialized factors are the base for proprietary company know-how and are integral to innovation. This ties them to the firm’s home base and makes them less effective in a foreign site. (Sölvell, Zander and Porter, 1999:28)

While the unqualified workers are easy to replace, it’s not the case for highly qualified workers, where more investment and training are needed (Montmarquette and Thomas, 2005). Thus it is essential for the industry to attract and keep these employees in order to keep its competitiveness at the World level (Landry, 2000). It’s even more crucial now that employees’ loyalty is less based on the than on the possibility to feel at home in an environment where jobs are interesting and where the culture is rich and dynamic (Jensen, 2005; Hanna, 2005).

Changes in the industrial character of many cities have created jobs which are also often in small enterprises demanding highly qualified employees, thus reinforcing the interdependence between public and private partners:

The new jobs are to be found in other industries – generally knowledge-intensive industries or services – which are plentiful in some industrial countries. This is the reason for efforts to promote “local mobilization” conducted jointly by companies and local politicians trying to create local conditions for new knowledge-intensive operations. (Ekstedt and al., 1999;20)

This collaboration between the City and the large industry also has an impact on the City’s strategic planning aimed at taking place in globalization.

1.2.2 The objective to become a World-City

Globalization has an impact on decisions taken by City councils who justify their priorities, including those that favour industrial economic development:

In municipalities and regions where the populations depend for their livelihood on internationally oriented enterprises, the local politicians are often closely concerned with matters of enterprise policy...» (Haggröth, 2000:82)

In this context, the urban *élite* defends the City's choice to become global as a support for local social development (Granberg and Von Sidow, 2005). According to Sokol (2004), these marketing efforts to become World Cities are done in order to increase the market-base profit and wealth while social development should be seen as a condition of economic success and not the opposite. City priorities are based on industrial economic development rather than social elements (Nozick, 1995; Hanna, 2005); behind the image of the high class World City, power is kept within the public and private *élite* who defines the City's priorities (Granberg and Von Sidow, 2005; Chiasson, 1999).

According to Jensen (2005), this choice of prioritizing that kind of international glossy image rather than a variety of City images probably does not echo the perception of citizens less involved in the industry; that situation creates local conflicts. For example, in Randers, Denmark, some citizens have refused to take part in City branding workshops because the new urban image was trying to hide important local social concerns (Jensen, 2005).

In the process of marketing themselves, those Cities aiming at becoming World Cities are often defined as «post-industrial», as if the industry was gone, which is usually not accurate.

1.2.3 A post-industrial status that still includes the industry

Some authors prefer to use the *neo-industrial* expression rather than *post-industrial* to describe a city that still hold on to its industrial activities while reducing their negative impacts on quality of life and environment (Ekstedt and al., 1999). Industrial activities that create negative impacts on the environment (pollution, hard working conditions, etc.) are moved to the periphery in order for both the industry and the City to keep a positive and attractive image (Sölvell, Zander, Porter, 1999). According to Ekstedt and al. (1999), these cities are not less industrial now than in the XIX^e Century and probably rather more: "We are not experiencing the end of industry, or industrial production or of capital intensity in industry, but industry is changing and taking on new, alternative forms in which production *per se* is less in

focus than previously.” (1999:3) Nonetheless, although the suggestion of Ekstedt and al. of using the expression *neo-industrial* rather than *post-industrial* is appropriate, all through this research, the term *post-industrial* will be kept while being understood as *neo-industrial*.

Moving parts of the industrial activities to the outskirts of the neo-industrial City gives them a bipolarized characteristic: on one side, tourists, highly qualified employees and investors see the City downtown areas which benefits from the industrial wealth (post-doc education, cultural infrastructures, healthy environment, safety and peaceful neighbourhoods) while they deal also with negative aspects linked to industrial production in territories far from the City core. (Ward, 2003)

By segregating positive and negative industrial aspects, the City can attract enterprises and keep their qualified employees by offering a pleasant work and life environment while still producing industrial goods and services. Montréal is a good example of this situation: large multinational headquarters are based downtown close to many cultural infrastructures while oil and heavy industries are producing their goods, a couple of kilometres on the East Side of the Saint-Lawrence River, but still in Montréal.

Résumé

Public-private partnerships are possible when there is some power sharing between the public authorities and its partners, which is not the case with basic public administration. But depending on how much power is shared, *contract* PPPs and *consensus* PPPs can emerge. *Contract* PPPs are business deals where a public partner uses services from an enterprise to build or maintain public services or infrastructures. These deals are usually formalized with a very precise and complex tendering contract, stating risks and benefit sharing between partners. The relationship is a hierarchy, where the public partner (client) buys services from the private partner (supplier) while controlling the means and terms of the partnership. It's usually a two-side relationship between one public partner (or many public partners acting together) and a private consortium.

Consensus PPP can include many partners, including members of the civil society. The relationship has less hierarchy and the main goal is to use resources from each

partner to realize a common project while pursuing also specific interests. The differences between the two types of PPPs depend on its overall goal, the level of hierarchy, the rigidity of the deal and the objectives to be reached.

If power sharing between the partners is important, the level of trust and the interdependence between partners can play an important role in the success of public-private partnerships. These aspects can be there in a partnership between a City and its large industry both dealing with the effects of market globalization, while the quality of the local milieu is also an important element to maintain competitiveness. Improving the local quality of life – one way being to reduce environmental problems or improve overall access to culture – is also a goal of sustainable development, which is the subject of the next section.

1.3 The origins and definitions of sustainable development

There is a very wide range of literature on sustainable development, both from international organizations (i.e. United Nations, International Union for the Conservation of Nature – IUCN -, The World Business Council on Sustainable Development - WBCSD, Local Governments for Sustainability – ICLEI) but also from many researchers; in Québec, readings from Gendron (2001), Roche (2004) and Thuillier (2005) can be useful to understand the concept.

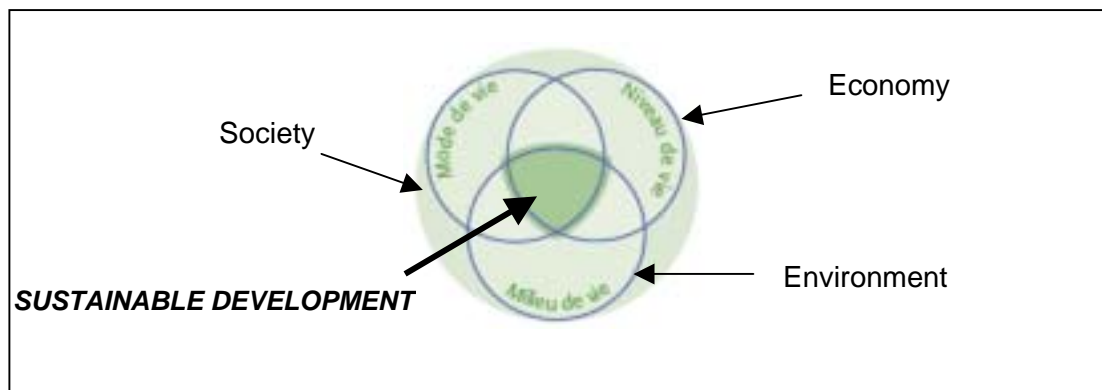
The concept of *sustainable development* has emerged from international summits and underlines the importance of changing our production and consumption modes but also the way we see technology and decision-making processes (Kastenhofer and Rammel, 2005, Gendron and al., 2005)

1.3.1 The IUCN and Brundtland definitions

The expression *sustainable development* appears from the first time in 1972, in a document from the UNPD, the FAO and the Unesco (Thuillier, 2005). In 1980, the IUCN defines it as: “...a development taking into accounts the environment, the economy and the society” (Gendron and al, 2005:6).

The IUCN is one of the two most widely known definitions (Gendron, 2005). As shown in figure 1.5: the economy is a mean, the environment a condition and the society finality (Gendron and al., 2005:10).

Figure 1.5 The Sustainable Development Diagram



Source: Plan de développement durable du Québec, MDEPP, 2005, p. 10.

The second most known definition comes by the UN Commission on Environment and Development, also called the Brundtland Commission. Following the report published in 1987, the concept of *sustainable development* has been promoted all over the world. The definition is: "Sustainable Development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

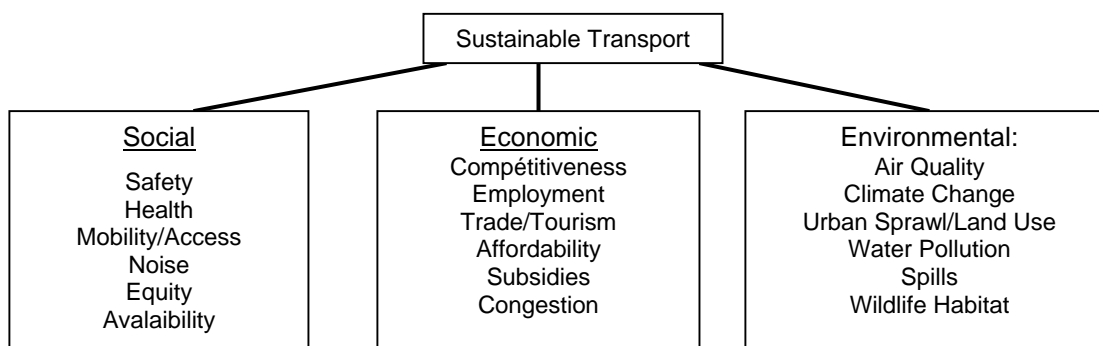
In the introduction to the report, Gro Harlem Brundtland, president of the UN Commission and then Prime Minister of Norway, explains that it would be incorrect to limit sustainable development to the environment. On the contrary, the Brundtland Commission insists on issues such as the importance of demilitarization and the elimination of poverty (Vaillancourt, 1995)

Many ecologists reject the concept of *sustainable development*, arguing that economic growth cannot be done in the respect of the ecosystems survival and thus, it is an *oxymoron* (Newman, 2005, Sachs, 1996). Without rejecting the concept, others think that its popularity comes from the fact that the definition is purposely vague so that all stakeholders can find their interest in it. (Gendron, 2001).

1.3.2 A definition of *sustainable development* applied to a sector

Sustainable development is sometimes understood as *sustainability* in a specific sector, like *sustainable transport* (see figure 1.6).

Figure 1.6 A definition of sustainable transport



Source : <http://www.tc.gc.ca/programs/environment/sd/strategy0103/sustainabledevelopment.htm>

Nonetheless, even if this research is about transport issues, this definition of *sustainable development* will not be used because the focus of the research is on public-private partnerships and not on transport *per se*. The definition that will be used in this research is thus the combination of the IUCN and the Brundtland Commission definitions.

To reach *sustainable development* objectives, partnerships can be an appropriate tool: “Successful partnerships can create positive impact at various scales – ranging from development of responsible societies, to ensuring natural resources for life support, and adding value to business.” (Nordic Partnerships, 2002:8).

Partnerships can be sustainable or not, depending on the goals and type of public-private partnerships: «Different types of public–private partnership lead to differing visions of government and bureaucracy, which will influence the question of whether public–private partnerships help or hinder sustainable development.» (Regéczi, 2005:206)

1.4 The public-private partnerships and sustainable development

In sustainable development practices, the equilibrium does not depend only on the symbiosis between economy, society and environment, not even if one is deemed more important than the others by some (Gendron, 2005). It also depends on the role played by public, private and civil society partners and their inclusion in the decision-making processes and actions in sustainable development planning (Regéczi, 2005).

In order to be pursued, *sustainable development* action plans must refer to a territory (Thuillier, 2005). Regions and municipalities are especially concerned by sustainable development and can build projects based on public-private partnerships with the enterprises operating on their territory.

The concept of Local Agenda 21 has emerged from UN Rio Summit in 1992 in order to help regions and municipalities to turn the concept of sustainable development into initiatives that can include businesses and civil society members. But in order to improve their collaboration, it is important to understand the mandate and interests of each type of partner.

1.4.1 The public partners and sustainable development

As mentioned before, public partners such as a City can become more sustainable by using a Local Agenda 21 (Gendron and al., 2005). The LA21 is used to developed relationships between the public sector and the actors on the territory, including businesses and industries (Roche, 2004) to ensure citizens' welfare (Thuillier, Paran and Roche, 2002). This is a process where consensus and collaboration are mandatory to build and realize an action plan. An evaluation is also needed in order to measure the impact of the action plan on sustainability.

In Europe, the Local Agenda 21 have been thought and resumed in the Ålborg Charter, in 1994⁹. Created in collaboration with more than 250 members, both from the public and private sectors but also from civil society, 80 European municipalities have signed an agreement to implement Local Agenda 21 on their territory. The Ålborg Charter contains 14 themes from the Rio '92 principles, including the issues of sustainable transport and the municipalities' responsibility in fighting climate changes (Thuillier, 2005). Public partners must make sure that public-private partnerships based on sustainable development principles are in line with the goals from the Local Agenda 21 even when they do not always initiate the process.

⁹ <http://www.ecologie.gouv.fr/IMG/agenda21/textes/aalborg.htm> Consulté le 3 février 2008.

1.4.2 Private partners and sustainable development

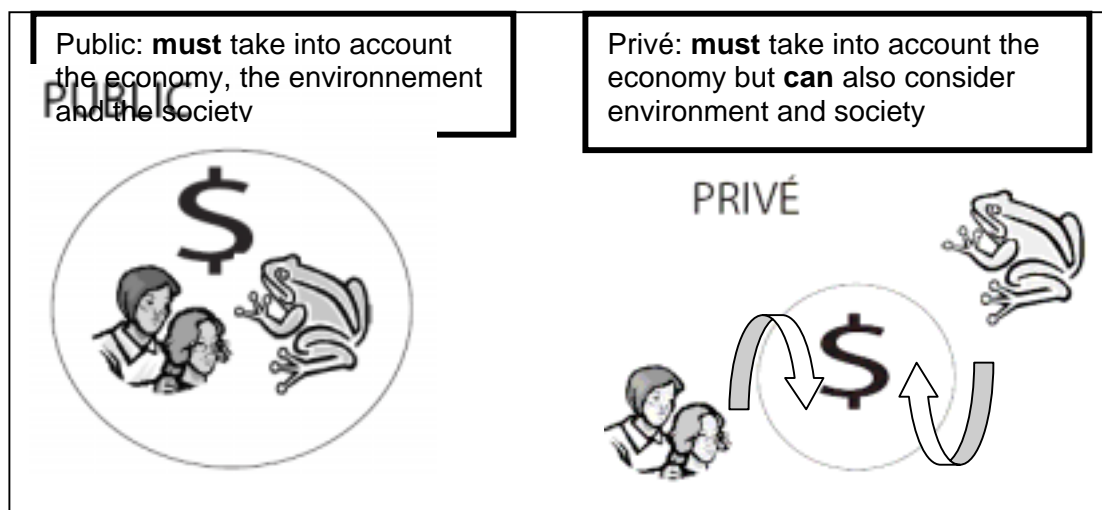
For the private enterprise, taking care of the environment or human rights are issues discussed and applied within the realm of corporate social responsibility.

Legal and public pressure on the attainment of good environmental practice has mounted and a significant proportion of this pressure has been directed at business, which is often identified as the major source of pollution and environmental degradation. (Jenks, Hallinan, 2003:1)

One of the reasons why private partners get involved in local projects is that by helping the society in getting environmental or social benefits, they are well positioned to negotiate with governments (Gagnon and Klein, 1991). Doing so also improves their corporate reputation and relationships with stakeholders, which can have a positive impact of profitability (Lafrance, Lehmann, 2005). On the other hand, stakeholder demands can be seen by some enterprises as a burden when governments impose legislations that force them to internalize some environmental or social costs. This can be seen as hindering their competitiveness, more specifically in a context of globalization (Gendron, 2003).

As an example, in a process of sustainable development, the public partner will try to get the collaboration of all partners by using a Local Agenda 21 while the private partner will support environmental or social projects according to each understanding of the concept of *sustainable development* but also in taking into account its own specific interests, as seen in figure 1.7. For the enterprise, citizens and other civil society members are *stakeholders* with whom they enter dialogues while being *good corporate citizens* (Sémal, 2006) but not with the idea of sharing the decisions.

Figure 1.7 The differences between public and private partners' duties



Even if it is both in a context of sustainable development, the public and private sectors do not have the same type of relationships with members of civil society, which role has to also be clearly defined.

1.4.3 The civil society and sustainable development

In public-private partnerships, according to some researchers, civil society members – both the citizens and the NGOs– play an indirect role (Aubert and Patry, 2004) but in the Local Agenda 21, they must play a central role. In sustainable development processes, the civil society is essential at the planning and the evaluations stages (Thuillier, 2005) to make sure that strategic priorities are not only business issues (Thuillier, Paran and Roche, 2002; Regéczi, 2005).

Civil society members can have a decisive influence on public and private partners. Public opinion can have a strong impact on competitiveness (Cramer, 2002:101). That explains why the enterprise has some interest in taking corporate social and environmental responsibilities. Those who take into account their *stakeholders'* concerns – *stakeholders* being the people and organizations that can be affected by the actions and impact of the enterprise – might well be more profitable than the others (Col Debella, 2004). According to some researchers, civil society members must also be included in public-private partnerships where there is a need to improve some consumption habits, especially when building awareness to the importance of using *greener* technologies (van den Hove, 2004). Civil society members can also help convince governments to adopt legislation that protect the environment:

Well-informed citizens can also become a *legislative resource*, by playing a direct role in some legislation by putting pressure at the local level, by helping in getting legislations, even in identifying delinquency (Van den Hove, 2004:24 – *translated by the researcher*)

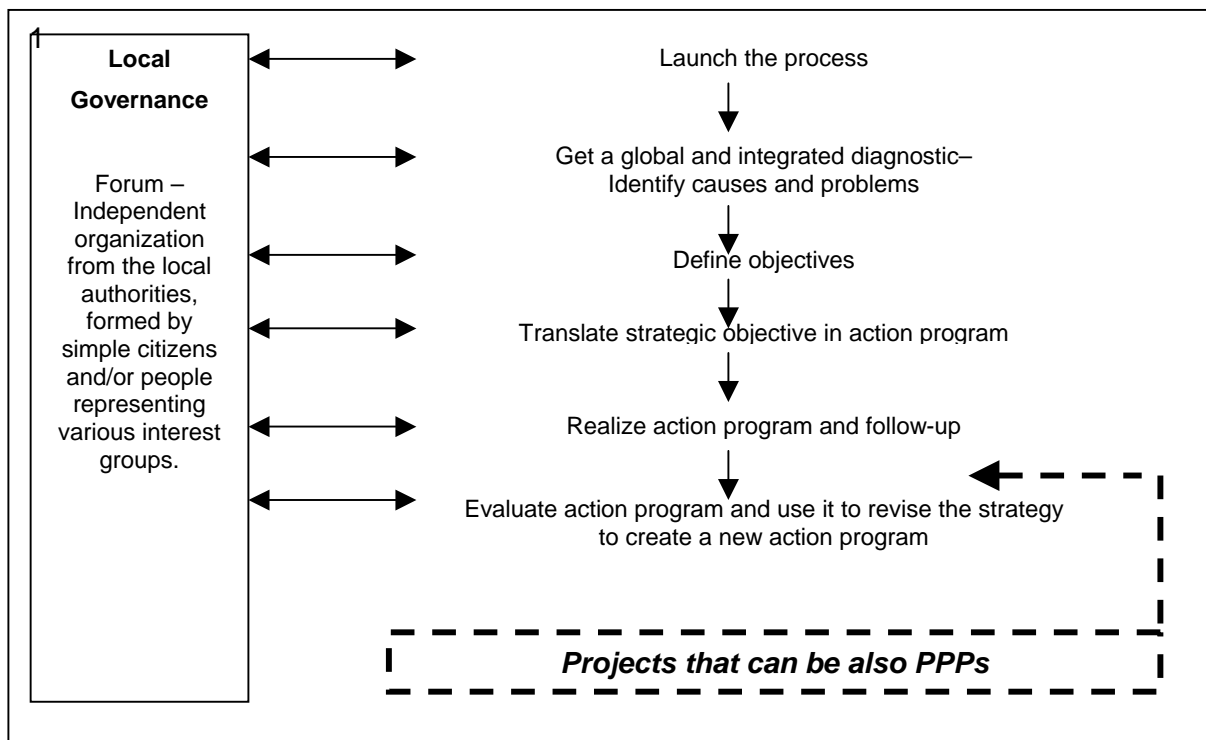
Some civil society members such as environmental or social groups can also play an interesting role in public-private partnerships. As an example, the Danish section of the World Wild Fund (WWF) has supervised the Nordic Partnerships up to 2005, which were financially supported by diverse government levels and private enterprises¹⁰. The objective of those partnerships was to develop sustainable

¹⁰ *The reason for closing down was that we couldn't secure the financial sustainability of the initiative - in spite of the good work done and the enthusiasm of the members we could neither attract supplementary government funding nor*

markets. The number and types of partners depended on the partnerships: governments, all types of NGOs, international organizations, business and industrial networks, consulting firms, etc. (Johansen and al., 2003).

In Local Agenda 21, civil society members have the main role: a social forum composed of interest groups and citizens is then formed. A diagnostic is made in order to define the community goals of sustainability that will be reached using an action program, which type can be different from one another. All these actions will then be evaluated and upgraded again by the forum. Citizens and all interest groups are included at all stages of the LA21.

Figure 1.8 A Local Agenda 21 Process



(Source: modified from Thuillier, 2005:12)

As seen in figure 1.8, being tools to reach the objectives of the LA21, the projects are not *per se* included in the decision-making process. This question is important when there is a need to assess if a project is in line with the sustainable

enough members to make the partnership sustainable. Email from Kim Carstensen, WWF Denmark, February 10 2006.

development principles. Citizens' or civil society participation is not mandatory since the projects have been identified by them and they will evaluate them as well. So, public-private partnerships can be used to achieve the goals of sustainable development.

In résumé, the definition of *sustainable development* in this research includes both the IUCN and the Brundtland definitions. *Sustainable development* needs to be put in action through an action plan such as the Local Agenda 21, supervised by the public partner with the citizens' welfare as the main objective. The private sector can participate in the process, which can include also public-private partnerships as tool to reach the objectives. Those must be in line with sustainable development principles as defined by IUCN and Brundtland but also from the Local Agenda 21 action program.

When there is no Local Agenda 21, other planning and evaluation processes must be used so that the citizens and civil society members can participate in setting up the priorities involving the community's sustainable development.

Now that the concepts of public-private partnerships have been evaluated, the objectives of the research can be linked to the research question and the hypothesis.

1.5 Research objectives, question and hypothesis

The main goal of this research is to study the possibility that public-private partnerships are tools to be used in sustainable development projects, more specifically in the context of the City and its large industry who want to address international competitiveness together. In order to validate this theory, a study case will be analyzed, including the role of the partners, their motivations and their needs.

Research question:

Can public-private partnerships be used in sustainable development projects in a context of interdependence between the City and its large industry that are both facing international competitiveness?

First hypothesis

According to the definition from the review of literature, the citizens' interest must be at the core of the sustainable development of a territory and that is possible with Local Agenda 21 planning in Cities. The absence of participation from the civil society in the PPP can become a main element to validate or invalidate its sustainability, which is the main subject of this research.

The first hypothesis thus reads like this:

In order for PPPs between the City and its industry to be sustainable, members of the civil society must be included as partners.

Second hypothesis

To keep its competitiveness and attractiveness, the large industry must make sure that the local milieu benefits from a very good quality of life, in order to attract and retain its highly-skilled employees who are very mobile and can choose where they want to work and stay, from many cities in the world. The City must also keep its industries so there is interdependency between the City and its industry. Thus they benefit by a common positioning at the world level.

The second hypothesis thus reads like this:

Local public-private partnerships have a positive impact on a common City and industry branding as world leaders in specific sectors while being sustainable.

In order to validate these hypotheses, a case study is used as methodology. It is explained in details in the next chapter. The Study Case is a consensus PPP between the City and its large industry in Sweden.

CHAPTER II

THE METHODOLOGY

*A case study is an appropriate tool
to gain knowledge
and improve understanding
about Sustainable Development.
(OSKaR's, 2004:3)*

In this chapter, the reasons why the study case methodology has been used will be explained, including the use of semi-direct interviews, the choice of the interview guide and the selection of the interviewees. The mechanism to analyze the data and its verification will also be explained.

2.1 The case study as a research strategy

The Study Case is an appropriate methodology to try to evaluate if public and private partnerships can be used in a sustainable development context with a City and a large industries both facing globalization. According to Gagnon (2005), in general, qualitative methods can be used to grasp the complexity of social systems. The Case Study is used to answer such questions such as the way it functions (how), the relationships between actors and those who act in the project (who) on a given

territory (where) at a given time (from when to when). Case Studies can be used to evaluate results and follow-up of a project (Yin, 2002).

One cannot generalize from a study case but try to explain it, most specifically when «...the experience of the actors is important and the context of the case essential to understand.» (Gagnon, 2005:15). It can be used with public-private partnerships in a sustainable development context because both the concepts of *PPPs* and *sustainable development* have multiple meanings and can refer to very different realities (Belhocine, Facal and Mazouz, 2005; Gendron and al., 2005). Conclusions from this research can be used to have a better understanding of other cases of public-private partnerships in a sustainable development context, especially those linking the City and the large industry.

Studying a case study involving public-private partnership in the context of sustainable development can be useful to understand the way it works and some of its informal details because the opinions and the vision of these two concepts by people involved or not in the case can be very different. PPPs are sometimes seen as being a relationship only between the Government and the enterprise, and sustainable development as being an inclusion of all types of partners, including citizens (Thuillier, 2005); thus the research must include empirical studies and not only theoretical data. According to Gagnon and Klein « New analysis for local and territorial studies now focus less on complex theories and more on the necessity of empiric and qualitative data in order to see the relationships between space and development.» (1991:155; translation by the researcher). This is true of case studies involving partnerships where the City collaborates with large enterprises that have a definite impact on its own well-being.

The objective of the research being to study the public-private partnerships between the City and its large industry in a context of international competitiveness but also of sustainable development principles, a case which included environmental, social and economic issues was needed. This is the case with Biogas Väst, a partnership between the Swedish city of Göteborg and the multinational transport manufacturers Volvo AB and Volvo Car Corporation. The partnership aims at developing the biofuel market as biofuel, including the vehicles.

2.2 The interviews

The semi-direct interview has been chosen as a model to allow some freedom for the interviewees while getting precise answers on some questions. This can allow also for the interviewees and the researcher to exchange knowledge, perceptions and experiences. Semi-direct interviews are frequent because researchers can analyze interviewees view their own practices and actions, which is important since public, private and civil society members are interviewed.

2.2.1 The choice of interviewees

Biogas Väst is a public-private partnership with many actors, both public (region and municipality), private (Volvo), a mixed public-private company (FordonsGas) and a private/civil society member (LRF). Most Biogas Väst actors have been interviewed but members of the civil society were also asked to answer the questionnaire. The list is available at Appendix B. Some questions have been asked to find out if the interviewees were familiar with more than one sector and if they were involved before in the defence of the environment (see Table 2.1)

Tableau 2.1 The types of partners and their former experiences

PARTNERS (19)	Number	Former Experience in environment	Former experience in other sectors
Private sector employees	4	2	0
Politicians (cities, regions)	3	3	1
Public sector employees(cities, national)	4	2	0
City company employees	4	1	1
Civil Society members	4	3	1
Total	19	11	3

If more than half of the interviewees have previously defended or worked for the environment (11/19), only three had collaborated or worked with more than one sector (NGO's or workers' union), while two of those three have worked in the three sectors.

2.2.2 The technical data on interviews

The researcher has done all the interviews, sending first the interview guide to all interviewee (see Appendix A) and a consent form. All interviews have been done in

Sweden between December 8th 2005 and January 13 2006 and lasted more than an hour. All verbatim have been sent to the interviewees for approval. Out of the 19 interviews, two have been done with the interviewees having an assistant, whose answers have been merged, for a total of 17 interviews.

2.2.3 The codification and the analysis of the interviews

All the interviews have been coded and put in a matrix for analysis. The process has been redone by another graduate student from the same university department to check for accuracy. In order to ensure confidentiality, a color, a number and a code has been given to each interview: private (Pr), public (Pu) or civil society (Sc), as seen in Table 2.2.

Table 2.2 An example of the coding

Question 6: Would you make any change in the project?	
Pr1	Of course, when we start something, it's difficult to get publicity for it, it's much easier when you have done something. Of course I want it, everybody knows from the very beginning but it's a dream. I'm not working daily with it, so... But I think in the big perspective, it has been really well run, yes.//
Pu3	Just, I think, a change, one thing. Make it more public by information. (population, environmental NGO's?) No, the politicians. Specially in Stockholm.
Sc5	Maybe I would get even more participants from the beginning because I think that Göteborg and Trollhättan were the only municipalities from the very beginning. And the other ones came afterwards and... Maybe I would have put even more money from the beginning... If I knew that it would be so successful...
Pu6	Yes, there would be no big changes, only little details, only details.

2.3 The validation of the methodology

Verifying the process include getting primary and secondary data, research on the study case by other researchers, interviews with actors from the study case but also from outside of the project and validation by another researcher, in order to check the accuracy between the studied theory and the empirical data. As for external validity, since comparisons cannot be used in this case, this is more complex. Some studies on public-private partnerships in the context of sustainable development exist (Lafrance and Lehmann, 2005; Von Malmborg, 2003, Regéczi, 2005) but none of these PPP include the City and its large industry.

Preliminary results have been presented and discussed with interviewees but also with a former researcher on the project and a former City politician, on September 11

2007 at Business Region Göteborg offices. New data has been added to the discussion and conclusion of the research.

CHAPTER III

BIOGAS VÄST

*«The Swedish way towards sustainable mobility.
Powered by partnerships and methane. »*
Biogas Cities Brochure

In this chapter, Biogas Väst will be described in its socio-economic context, including the status and characteristics of each partner involved and the elements of the partnership itself. This detailed description is mandatory to understand this specific type of public-private partnership.

3.1 Sweden

Sweden is one of the three Scandinavian countries while being also Nordic. As a member of the European Union, the country must follow the laws, norms and legislations adopted by the EU while it benefits from programs and subsidies in sectors such as environment and sustainable mobility. Sweden is at the avant-garde of biogas development as biofuel (Plombain, 2003).

Sweden has 21 regions whose basic responsibilities include health, education and social services but can also include sectors such as sustainable development. In

most regions, regional development is done by regional governmental offices under the responsibility of the national government. This is not the case for Västra Götaland (where the study case is based) because in 1999, some regions have been designed as pilot-projects where decision-making on regional development issues is done by a regional council rather than the prefecture. According to one of the politicians interviewed in this research, this is one of the main reasons why projects such as Biogas Väst have emerged.

3.2. The Västra Götaland region

Västra Götaland was born with the fusion of Bohus, Skaraborg and Älvsborg in 1998¹¹. The region is growing very fast: between 1995 and 2005, the population has grown by almost 10 %, and is now around 1,5 million people (BRG, 2006). There are 49 municipalities, both rural and urban; Göteborg is the main city. The region's priorities are the promotion and support of sustainable growth. (SKL, 2003:4)

3.3 The City of Göteborg

With a population of 475 000 people, Göteborg is the second largest city of Sweden. If the service sector is the largest and there are almost a third of all jobs in the public sector, the industrial and manufacturing sectors has also been important for a long time (Bäck, Johannson and Tedros, 2003). Largest Scandinavian port, Göteborg is right in the middle of the triangle made of the three Scandinavian capitals: Copenhagen in Denmark, Oslo in Norway and Stockholm in Sweden (Bäck, Tedros and Johannson, 2006). The concentration of industries and heavy traffic has created such pollution and transportation problems that, until the beginning of the 1990, the City of Göteborg had the dubious reputation of being the most polluted city of Sweden. In order to reverse the trend, the Swedish government has awarded subsidies to decrease environmental problems, in agreement with the local authorities who were getting more and more worried about air quality (Williander, 2006).

Around the same time, transport manufacturers Volvo and Scania had already produced some biogas busses and the biofuel had already been available for some

¹¹ <http://www.vastragotland.se/> January 17 2007.

years in Göteborg but also in Trollhättan, another municipal partner in Biogas Väst (Ahlbäck, 2003). Municipalities wanted to improve their environment, both for public health but also positioning, so they began to ask for less polluting vehicles for public transport. Timing was good since Volvo had decided to develop its business strategy by strengthening one of its core values, the environment. The production of the first 50 *bi-fuel* Volvo cars (biogas or natural gas and petrol) was thus ordered by a taxi company (Williander, 2006). A working committee called TRUST¹² and including people from the City of Göteborg and Volvo was also set up in 1994 to discuss transport and environment issues in large cities, most specifically Göteborg (Ahlbäck, 2003; Back, Tedros and Johansson, 2003).

The environmental crisis in Göteborg has thus been an opportunity to obtain a consensus, both public and private, on the importance of working together to correct the situation. Biogas Väst is a concrete result emerging from this momentum that includes both public and private interests.

3.4 The portrait of PPPs and Local Agendas 21 in Sweden

While they are common in Québec, France or England, *contract* PPPs in Sweden are not frequent in the transport sector. According to Hultkrantz, Karlström and Nilsson (2005), one of the few *contract* PPPs in transport has been the A-Train, a BOT project linking the Arlanda Airport and the City of Stockholm, the capital city of Sweden. The presence of *contract* PPPs can be explained in a context where both socialists and non-socialist political parties wanted to find alternatives to public spending for infrastructures such as rail links:

Both the strained budget situation of the time, in combination with the growing demand for public money at large, have made governments of both socialist and non-socialist leaning interested in off-budget funding mechanisms. (Hultkrantz, Karlström and Nilsson, 2005:5)

Sallnäs and Giverholt (2003) argue that PPPs such as BOT (buy-operate-transfer) or PFI (private finance initiative) are almost inexistent in Sweden because the center-left coalition prefers to use other investment modes for public infrastructures:

¹² TRansportUtveckling i STortstad.

The PPP issue was too sensitive to be discussed during the 2002 election year, as a consequence of the leftist parties' negative attitude towards private financing. (Sallnäs and Giverholt, 2003:45)

While *contract* PPPs are rare, *consensus* PPP are quite common since the Swedish government encourages partnerships with the enterprises in its sustainable development strategy (Swedish Government, 2006). Local Agenda 21 are also common: all Swedish municipalities are involved in some sort of Local Agenda 21 (Mega, 2005) even if the movement tends to slow down (Nguyen and Gravereaux, 2007). The LA21 have been an opportunity to build new networks with the enterprises, including voluntary agreements to improve environmental results whether for the enterprises or their products (Nguyen and Gravereaux, 2007).

Many public-private partnerships already exist in Göteborg, such as Green Chemistry (market development of *green* chemicals), an environment and sustainable development Center and GAME (Göteborg Action for Management and Environment), three organizations where public and private partners work together in order for them to develop an environmental expertise (OSKaR, 2004).

The City of Göteborg's decision to prioritize projects that can be used for a common positioning with enterprises at the international level while opting for a fast local growth has brought critics:

...critical voices are raised regarding the financial priorities made by the City (events and growth before welfare), values prioritized by the City (market values before preservation) and the way in which politics is carried out (in tight networks, behind closed doors rather than in public debates). (Grandberg and Von Sidow, 2005:5).

According to Grandberg and Von Sidow, the existing networks where the political and business élite meet creates credibility problems for the public sector, as they manage the City using a *spectator democracy*. This situation is said to create an uneven balance between public and private partners: «The municipal actors influence the organisation of the political process in a way that gives external actors considerable influence over politics in exchange for attractive resources.» (Grandberg and Von Sidow, 2005:12).

This is similar to the caution expressed by Belhocine, Facal and Mazouz about the prospective PPPs: «...partnering with private firms in those PPP might erode the

power of decision of the public partners in highly strategic sectors in offering private partners the opportunity to influence some society choices.» (2005:10; *researcher's translation*).

Biogas Väst is not part of the Local Agenda 21 initiatives in Göteborg, since they come from the 21 burroughs rather than from the central City, that has chosen a local adaptation of the European Ålborg Charter. If civil society members were part of the decision-maker group at the European level when the Charter was written, in Göteborg, it's a team of professionals from the City who has been working on the local adaptation:

“The Executive board signed the Aalborg commitments in 2004. The Board has after that approved a baseline report and a target setting document. Both of them sent to the Aalborg secretariat. Both of the documents were written by a group of officers with different qualifications.”

Civil society members were not included in the Charter's adaptation to Göteborg because there was nothing different from the European document but are invited to provide information on the initiatives that have been done in order to achieve sustainability¹³, like those accomplished by the Local Agenda 21 committees from the 21 burroughs of the City (Ingvar, 2004).

3.5 Former research on Biogas Väst

Prior to the actual research, there have been only two researches on Biogas Väst, both dating from 2003, which was supposed to mark the official end of the project. Williander has also mentioned the project in an article dating from 2006 where he studies environmental concerns at Volvo Car Corporation and Ford Motor Company. A brief description of the results from those works is useful as complementary data to the actual research.

3.5.1 Bäck, Tedros and Johansson (EU research project)

Done by a group of four researchers from the University of Göteborg's departments of political sciences and public administration, the first research compares 18 cases in 9 European cities, including four cases in Sweden. Sponsored by the European Commission as part of a program called PLUS (Participation, Leadership and Urban

¹³ Email from Katrina Folland, Urban development official, City office, Göteborg. 13 décembre 2007.

Sustainability), the researchers have compared two study cases in two different sectors of local development, social inclusion and economic competitiveness, i.e. one of each category in both Stockholm and Göteborg, for a total of four studies in total.

The objective of the research was to measure the importance of the interaction between local leadership and local community involvement in a search for «urban sustainability» (2003:4). Interviewees representing FordonsGas and Volvo Car Corporation – private sector -, two members of the City council and the two managers of Biogas Väst from Business Region Göteborg - public sector - (see complete listing at Appendix B). 30 other persons from the political, business and social élite have also been asked to answer a questionnaire sent by mail.

The results show that Biogas Väst is based on a local partnership formed of the political and business élite whose network is well established, which makes it easier for such projects to emerge and be supported. The success of Biogas Väst is partly due to Göran Johansson's interest as chief of the City's executive council.

It is of interest to consult the results of that research because social and political issues are included along with concerns for civil society members. According to the researchers, civil society members and citizens are not included in the project by lack of concern for the subject:

The lack of the activation of the local community (excluding the business community) is evident...It is difficult to label it a failure since no interest seems to exist among the involved to do so. The target group is the local business community, and not all businesses but those within the line of businesses under which the projects fall. Perhaps the result from the panel that less than half of the members had heard of the project is not as surprising, given this aspect. (2003:24)

The research team agrees that Biogas Väst is a public-private partnership while arguing that this type of management creates problems of transparency. The partners are all important Göteborg actors; Biogas Väst is not the result of a new network but based on an existing one made of politicians and businessmen (2003:15).

The research team believe that the City of Göteborg is managed under the *Old Boys Club* model, that Göran Johansson has lots of power while being quite a visionary and that the level of trust in politicians is fairly high. The analysis of the data also shows that trying to get consensus and partnership development between local actors is seen as being an important part of the political leader's duties:

Collaboration with local actors as well as building networks is seen as an important role for the political leaders...this is also in line with the preferred role for the political leaders to mobilize resources outside of city hall when implementing local policies. (2003:7)

According to them, Biogas Väst has been created « to achieve a better environment, a sustainable economy and new job opportunities». (2003:12) Concepts of *public-private partnership* and *sustainable economy* are used without being defined. Finally, Biogas Väst is not analyzed in regards to *sustainable development* principles.

3.5.2. Anders Ahlbäck (Master's Thesis)

Anders Ahlbäck's research is a master's thesis from Chalmers in Göteborg and bears the title: *The evolution and functionality of the branch development project Biogas Väst – an innovation system approach*. This research explains how Biogas Väst functions according to Jacobsson and Johnson's innovation systems and Carlsson's network theory that describe criteria and stages needed to develop new markets. The researcher has analyzed the technical aspects of Biogas Väst (phases, technical data on biogas, production and distribution costs, business partners and national context).

The methodology is not described. The interviews have been done with Göteborg City companies, the Swedish Energy Agency and an environmental NGO (see complete listing at Appendix B). The research is useful to learn about the project history, including the role that has been played by the TRUST committee, along with other initiatives linked to the biogas market in Västra Götaland and in Sweden. It is a research that answers more to the concerns of engineering than urban studies.

3.5.3 Mats Williander (Journal Article)

Williander (2006) studies Biogas Väst¹⁴ to compare Volvo Car Corporation's external relationships – outside the company – and its internal relationships – within the company – but also uses it to illustrate an example of *niche management*:

The strategic niche management approach proposes a multi-stakeholder conscious management of a niche in which an alternative to a dominant technology is given a chance to grow in strength and demonstrate viability from various aspects before being further disseminated into society.... (2006:93)

The article is useful to learn how Biogas Väst began, when the City of Göteborg has met with Volvo officials while the manufacturer wished to strengthen one of its core values, the environment. According to Williander, that partnership helped the car manufacturer to test its *bi-fuel* cars locally, when there were only a few biogas filling stations, before launching them on the international market (2006:100). The article also argues that the success of a new niche market in environmental technologies partly depends on external factors (in this case, the public-private partnership, the distribution network and a local culture supporting the emergence of environmental transport solutions) but also of internal factors linked to the enterprise itself (2006:104).

In résumé, conclusions from those three researches have shown that Biogas Väst has had an important impact on the local milieu, either in the choice of municipal priorities (Bäck, Johansson and Tedros, 2003), in developing new innovation markets (Ahlbäck, 2003) or to sustain interest for the large industry to get involved locally (Williander, 2006). Nonetheless, those studies have not studied the importance of sustainable development planning in Biogas Väst, i.e. the interest in validating if public-private partnerships can be used in sustainable development planning by analyzing more closely the relationship between the City of Göteborg and Volvo.

3.6 The characteristics of the Biogas Väst Project

According to Ahlbäck (2003), the main objective of Biogas Väst was to develop a new market for biogas while reducing pollution and creating new jobs. Under the supervision of Business Region Göteborg, a business development organization

¹⁴ Williander uses the term "Planet Gothenburg" instead of Biogas Väst...

belonging to the metropolitan region of Göteborg (see next section), many public and private partners have put together their expertise, whether in production and distribution of biogas or in the development of bi-fuel cars and other vehicles running on biogas (see figure 3.1).

Figure 3.1 The biogas production and distribution as biofuel



Source: www.biogasmax.eu

In order to insure constant supplying, the biogas is mixed with natural gas and thus named “green gas” (see figure 3.2).

Figure 3.2 The green gas principle



Source : Planet Göteborg

To build up the market, the authorities of Västra Götaland region and many municipalities from the region have renewed their fleet with Volvo *bi-fuel* cars and Volvo biogas busses in order to have a critical mass to make the project profitable. Partners have also promoted the project at the regional and international levels.

3.6.1 The partners

Biogas Väst partnership structure is quite complex, with both national, regional and municipal public organizations; city companies belonging to one or many municipalities but sometimes also partly to private partners, private partners linked by a name and common core values and finally, a farming association acting both as a lobby and as a private partner. Up to 2003, partners were only linked by an agreement and fairly minor investments, as explained in section 3.6.2.

3.6.1.1 The public partners

There are mostly public partners in Biogas Väst both from the national level, Vägverket, the regional level, Västra Götaland regional authorities, twelve municipalities, including Göteborg, and seven city companies. Each of the partners play a specific role in the project, depending on its interests, expertise and services provided.

Vägverket (ministère des Transports suédois)

According to an interviewee, Vägverket has become a partner in Biogas Väst because one of project's objectives is to decrease the level of GHG emissions, which is one of Vägverket priorities.

Västra Götaland Regional Council

Västra Götaland Regional Council is a member of the Biogas Väst project since the beginning because the region considers that bioenergy is a sector sustaining economic growth¹⁵. Their investment is one of the largest in Biogas Väst and the region also supports the project through its supplying policies, i.e. its car fleet. In 2004, the Council of Västra Götaland Region has adopted a resolution which made it mandatory for the organization to replace all its car fleet with *ecocars* by 2007; that

¹⁵ http://www.vgregion.se/vgrtemplates/Page_12339.aspx consulté le 18 janvier 2007

includes *bi-fuel* cars. One of the regional politicians actively promotes the projects at all levels, including the international branch of Biogas Väst, Biogas Cities.

The City of Göteborg

Founded in 1621, Göteborg is Sweden's main industrial hub and the center of Nordic Countries' transportation infrastructures. Half of all industrial activities from Scandinavia (Norway, Sweden, and Denmark) are located in a 300 km radius from Göteborg¹⁶. Many multinational enterprises are in Göteborg metropolitan area, including oil refineries but also research centers renowned for their results in safety and environment sectors linked to transport. The City is usually governed by the social-democrat party in coalition with the Left and the Green parties. Since 2000, the City of Göteborg also holds an annual international environment prize, with winners such as Gro Harlem Brundtland and Al Gore.

Other municipalities

Eleven other municipalities from the Västra Götaland region are partners in the Biogas Väst project, including small ones such as Grästorp (6000 people) and large one such as Borås (100 000 people). Trollhättan and Borås were involved in biogas projects before Biogas Väst, which is thus complementary to other initiatives already launched by these cities.

City companies

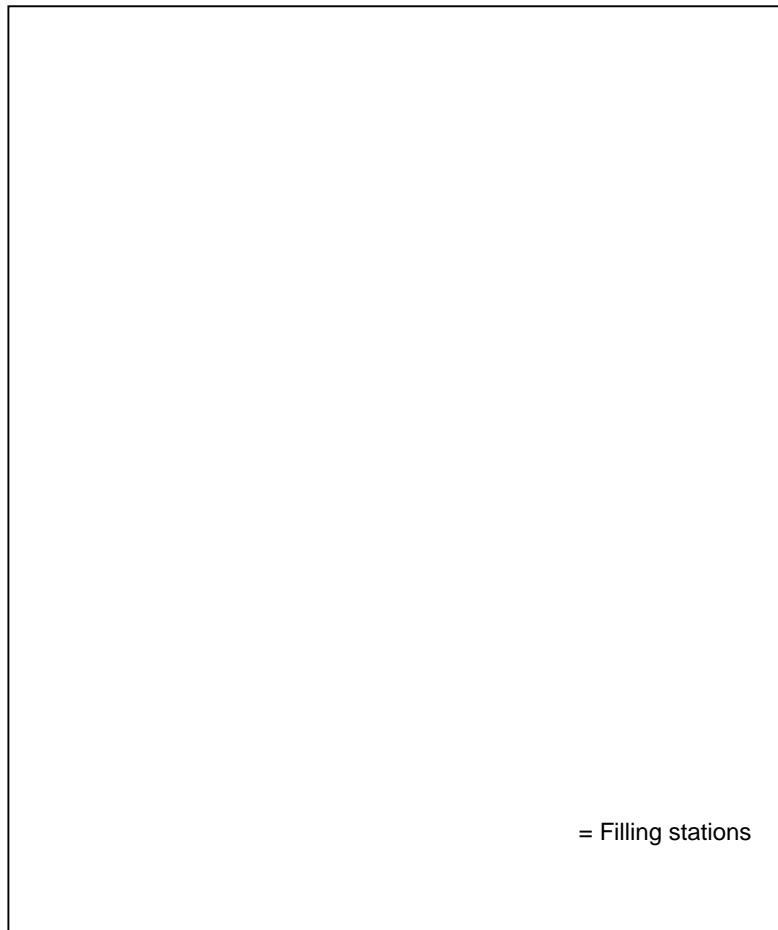
Seven city companies participate in Biogas Väst. As seen in figure 3.3, while Göteborg Energi, Traffikkontoret and Gatubolaget are sole property of Göteborg BRG, Renova and Gryabb belong to more than one municipality; FordonsGas is half-public, half-private.

There does not seem to be a correlation between owning parts in the city companies and being a partner in Biogas Väst. Nine out of 12 municipalities involved in Biogas Väst do not own any of the city companies also involved in the project (BRG, Renova or Gryabb). On the other hand, according to BRG's 2005 annual report, nine municipalities represented by BRG have their own biogas filling station(s).

¹⁶ <http://www.handelskammaren.net/item.aspx?id=303> consulté le 15 janvier 2007.

City companies provide a whole range of services needed for the project, whether with waste management to provide raw material, biogas production and distribution (filling stations), coordination and exportation of the project (Business Bureau). Many of them also use biogas for their own purposes (waste management trucks, public transport and municipal fleets).

Figure 3.3 The municipalities' ownership of city companies



Sources : www.businessregiongoteborg.com , www.gryabb.se , www.renova.se , www.goteborgenergi.se

3.6.1.2 The private partners

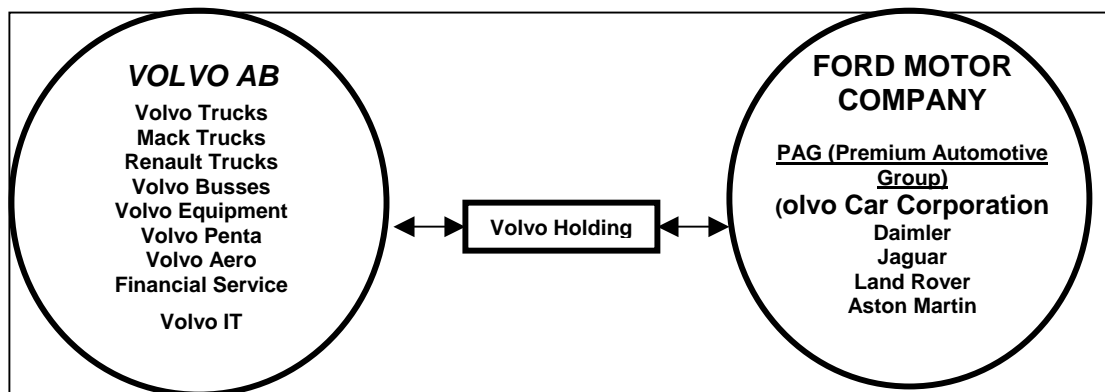
Volvo

The only partners that are fully private are Volvo AB and Volvo Car Corporation. Volvo AB was co-founded in 1927 by Assar Gabrielsson and Gustaf Larson in Göteborg. With plants all over the world and about 82 000 employees, Volvo AB's business activities are divided in nine sectors (Annual Report, 2005). In 1999, Volvo

AB sold its car division to Ford Motor Company who nonetheless kept the headquarters of the car division in Göteborg and not in the US.

Volvo Car Corporation has been included in Ford's PAG luxury division while Volvo's headquarters stayed in Göteborg. Since both manufacturers own a common name and core values— safety, environment, quality – Volvo AB and Ford have put together a holding structure to resolve issues emerging from this share of image and corporate values, as seen in figure 3.4.

Figure 3.4 The corporate links between Volvo AB and Volvo Car Corporation



Source : www.ford.com and www.volvo.com Consultés le 10 juin 2007.

This question of brand management is important since the actions from one manufacturer can have an impact on the strategic business development and credibility of the other partner, in a context where reputation can be seen as a business hazard (Clark, 2005). Volvo is renowned at the world level as a leader in safety issues (Elmqvist, 2007) but the concept of safety can be widened to include all business activities and core values, i.e. also the environment:

At Volvo, efforts are focused on making safety thinking a natural part of all of the company's processes and philosophy. The concept of safety has, however, over time been given a deeper and broader significance. It has been broadened from safe products to include personal safety, safety for all passengers, safety for others in the traffic environment and safety in relation to the environment. (Urde, 2003:1028)

In 1972, at the UN conference on human habitat, Pehr G. Gyllenhammar, then CEO of Volvo, has declared «Cars create pollution, noise, and waste». This phrase has

become a company motto for more than 10 years and has contributed to reinforce the notion that environment is one of Volvo's core value (Bolli, 2000). Volvo Car Corporation has been using the motto «*Volvo. For Life.*» which can also be related to the protection of the environment as life support.

Volvo AB and Volvo Car Corporation have different communication strategies when it comes to corporate responsibility. Volvo AB publishes corporate responsibility data on its website¹⁷ but not as a separate annual report. Volvo Car Corporation publishes an annual corporate responsibility report so that each stakeholder can find its own interest (clients, employees, scientists, environmental groups, etc.) and this information is also available on line¹⁸. Volvo AB has a code of conduct and is a member of the Dow Jones Sustainability Index. Both Volvo AB and Volvo Car Corporation support the UN treaty on human rights but are not members of the World Business Council on Sustainable Development¹⁹.

In Göteborg, Volvo AB and Volvo Car Corporation get involved in cultural projects such as the Opera House, the Symphonic Orchestra or the Nobel Museum. They support university and research center projects but also entrepreneurship (Young Enterprise and Venture Cup West). Volvo AB has got involved in projects aiming at a better balance between men and women in board administration (SNS project and Volvo SNS) while Volvo Car Corporation is known to be the only car manufacturer to have asked an all-women team to build a car, the YCC. Collaboration between Volvo and their cradle City is thus well-established and clearly demonstrates that the manufacturers act as corporate citizens in environmental and social issues²⁰.

FordonsGas

Created along with the Biogas Väst project, FordonsGas is responsible for the planning, building and managing of filling stations. Formerly belonging in equal shares to Göteborg Energi, Nova Naturgas and Norsk Hydro (Ahlbäck, 2003), FordonsGas now belongs in equal shares to Göteborg Energi (public) and Dong, a Danish natural gas company (private).

¹⁷ <http://www.volvo.com/group/global/en-gb/Volvo+Group/societyinvolvement/> . June 10 2007.

¹⁸ <http://www.volvocar.com/corporation/> June 10 2007.

¹⁹ <http://www.wbcsd.org> June 10 2007.

²⁰ All info is available at <http://www.volvocars.com/intl/corporation/environment/Pages/default.aspx> and <http://www.volvo.com/group/global/en-gb/volvo+group/societyinvolvement/> June 10 2007.

Lantbrukarnas Riksförbund (LRF)

Lantbrukarnas Riksförbund (LRF) is an association that belongs to farmers and farm owners, but also those working or owning the forests²¹. LRF acts both as a lobby to defend agriculture and as a private partner in Biogas Väst.

3.6.2 The investments

All public and private partners contribute financially to Biogas Väst; according to one of the interviewees, investing money in the project is an essential condition to become a partner (Pu2). Partners invest externally in the project in order to provide for coordination, marketing, lobby and technical help to the partners. As seen in Table 3.1, these investments are relatively small:

Tableau 3.1 The investment by the partners in Biogas Väst (2005)

Partner	Investments (SEK)
PUBLIC PARTNERS	
National Level	
Naturvårdsverket	1 583 502
Regional Level	
Västra Götaland	1 400 000
Vägverket	200 000
Local Level	
Göteborg and other municipalities	761 000
PRIVATE PARTNERS	
AB Volvo	100 000
Volvo Car Corporation	100 000
FordonsGas	100 000
LRF	300 000
TOTAL	4 544 502

Source: Business Region Göteborg

But what Table 3.1 fails to show are the investments done internally by the partners, i.e. within the enterprise or the organization itself (products and/or services). Many of these investments are very large: research and development, bi-fuel car and vehicles production, biogas production plants, filling stations, etc. For example, according to one of Biogas Väst coordinators, Volvo Car Corporation has invested

²¹ www.lrf.se July 12 2007.

more than 300 million SEK in *bi-fuel* cars while FordonsGas has invested between 100 and 125 MSEK in filling stations. Göteborg Energi has invested 40 MSEK for a biogas production plant while another one in Borås has cost 100 MSEK. According to Biogas Väst 2005 annual report done by BRG, the total amount of investments for biogas production and distribution amounts to about 270 MSEK (2006:27).

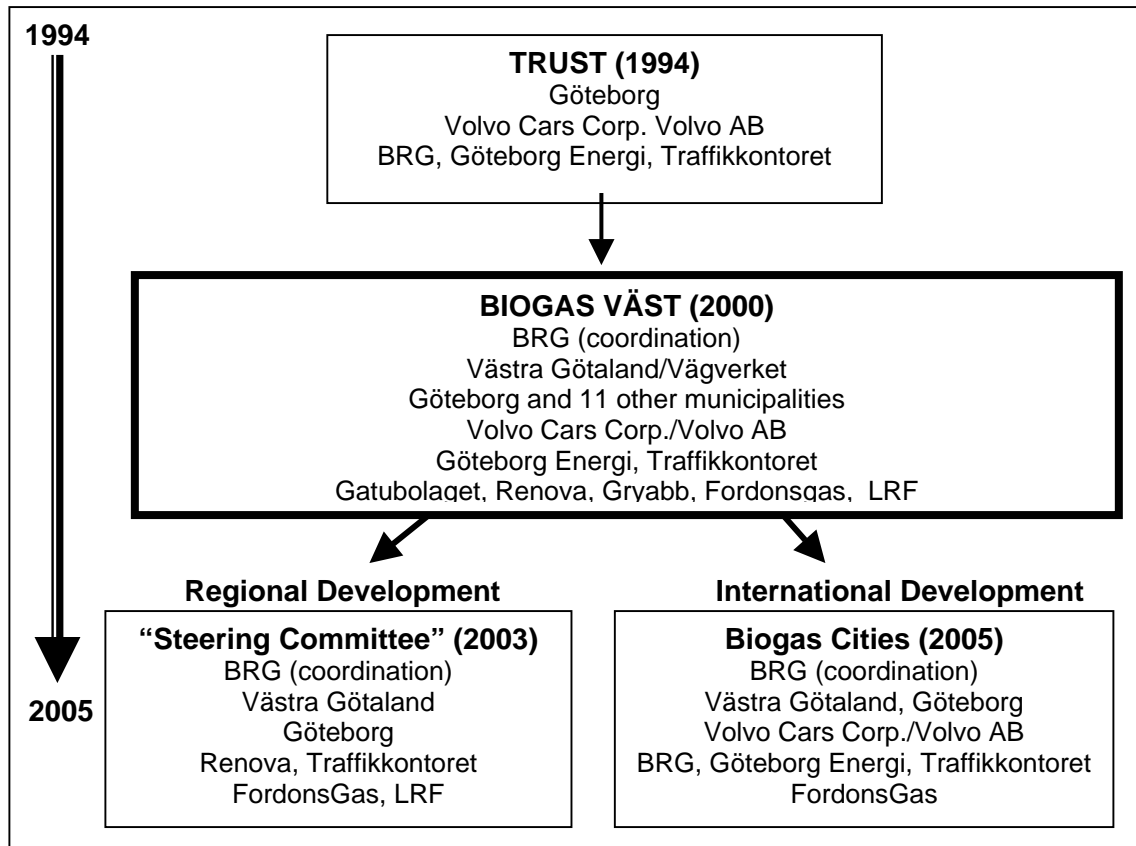
The project has been done in a way that each partner gets back its investment with other advantages. For example, if a *bi-fuel* car cost 30 000 SEK more than a regular car, owners can have access to free parking in many municipalities, a 40 % tax reduction when buying the car and a lower price for biogas as compared to petrol, biogas being non taxable. Another example: farmers give their agricultural waste to capture the methane but get back a fertilizer produced from the bioreactor which is less damaging than the original waste, smells less and can even be used for organic farming.

3.6.3 The phases, working committees and follow-up

Once the conclusions of a feasibility study has proven positive, the Biogas Väst project has begun and was initially planned in two 18-month phases, the first from March 1st 2001 to December 30, 2002 and the second one from July 1^{er} 2002 to December 31, 2003 (Alhbäck, 2003). According to Bäck, Johansson and Tedros (2003), one of the reasons explaining the choice of doing the project in two phases was for the partners to be able to evaluate the project at regular intervals before getting into a long-term involvement.

It was successful enough that the project was still on by the end of 2006 and will probably be still on for a few years, until the biogas market is stronger and working on its own, as confirmed by the opinion of almost half of the people interviewed in this research (7/17). The project has evolved over the years and has created other committees along the way (see figure 3.5).

Figure 3.5 The working committees (in chronological order)



Now that the project has been described, the data from the interview has to be analysed in order to answer the research question and to validate or reject the hypotheses that were built in order to learn if PPPs between the City and its large industry can be sustainable and the motivations for public and private partners to get involved in partnerships such as Biogas Väst.

CHAPTER IV

THE ANALYSIS OF THE RESULTS AND THE DISCUSSION

*«They have here what is called
Göteborgs Andan,
the Spirit of Göteborg.»*
Peter Lenken, GP journalist

In this chapter, the analysis of the answers from the people that were interviewed in the research will be done in order to answer the main research question, which is to assess if public-private partners between the City and its large industry can be used in sustainable development projects, in a context of international competitiveness. The two hypotheses will be validated or rejected and results will then be discussed.

The research question cannot be answered before we define to which type of public-private partnership the Biogas Väst belongs and if it's a sustainable project, thus the use of data from the interviews.

4.1 The public-private partnerships definitions

As was explained in the first chapter, public-private partnerships have been divided in two large categories, called in the research *contract* and *consensus* PPPs.

4.1.1 The PPP definitions from the interviews

As can be seen in Table 4.1, most definitions from the interviewees mention *public-private partnership* as *cooperation* projects (*consensus*) while many other define it as a *financial tool* (*contract*). While some of the interviewees have not heard about PPP or thus could not define the term, 14 of the 17 people have given a definition or their understanding of a *public-private partnership*.

Table 4.1 PPP definitions according to interviewees

PRIVATE SECTOR	
Pr1	Politicians and civil servants within the city administration and private sector are cooperating very well in lots of projects in the City of Göteborg
Pr4	Complete cooperation ...the definition of PPP is very wide...Biogas Väst is a PPP...the CO ₂ agreement in Europe is a kind of PPP, it's an agreement between the countries and the car industry, not the legislation, it's something else.
Pr11	It is a cooperation between the private and the public.
PUBLIC SECTOR	
Pu2	Unique cooperation between the enterprises, the companies, the authorities, the municipalities.
Pu3	Cooperation project between the companies and the public sector...with a vision...some projects and the same ideas that we will develop the market within this area.../
Pu6	Cities and the private partners can go together because we need each other , for the legitimacy of all of us.
Pu8	The private partners lend the money and the municipality has to pay it back later.
Pu12	Public money and private money on public projects.
Pu14	Private paying public tax money for a few years and give the money now.
Pu17	A private company, or several private companies do something together with a governmental or a city-owned organization... when it comes to building a highway, you have a consort that come together and build this and also that get some money from the people who are driving on the highway.
Pu19	A highway construction project, it's more of a financing system . Biogas Väst, it's more like a cooperation project.
CIVIL SOCIETY MEMBERS	
Sc5	Strategic partnership where municipalities, the public organizations and the private organizations take part on an equal footing .

Sc7	It's a way for the communities to get the development faster.
Sc13	Broader participation , especially on the public side...with the NGOs...the municipalities...citizen groups involved, citizens in general...

There are important differences between definitions by the interviewees, depending on the sector they come from: while private partners have only mentioned *cooperation*, interviewees from the public sector have defined PPPs as financial tools but also as models based on cooperation while those from civil society have define PPPs according to many different elements, ranging from equality between the partners to a faster way to develop projects (see Table 4.1).

These definitions apply to all kinds of PPPs, but what about Biogas Väst?

4.1.2 The analysis of Biogas Väst as a *contract* or a *consensus* PPP

Most of the interviewees expressed the opinion that Biogas Väst is based on cooperation (13/17), which would then be considered as a consensus PPP. In order to see if the findings of the research would corroborate that Biogas Väst is a *consensus* and not a *contract* PPP, an analysis of the main elements of a PPP must be done (see table 4.2).

Table 4.2 The *characteristics of contract and consensus PPPs*

<i>Contract PPP</i>	<i>Consensus PPP</i>
Project conceived by the public sector <ul style="list-style-type: none"> • Fixed characteristics • Fixed deadlines for building the project and transferring it back to the public sector 	Development or prospective project <ul style="list-style-type: none"> • Evolving tasks and mandates • Variable timeframe
Bidding and contracts	<ul style="list-style-type: none"> • No bidding • With or without contract
Hierarchy controlled by the public sector	Coordination without hierarchy
Public infrastructures and services	Project both with common objectives and specific interests
Public partner(s) and private consortium	Network

Project conceived by the public sector/Development or prospective project

The project has been conceived both with public and private partners. The number of partners changes as the project develops and according to whether it's at the local or regional level. According to one of the interviewees, widening the partnership constitutes a challenge:

We are so many now, I think it's 18 municipalities in this project next year, and it's hard to manage... Perhaps, we will work in other ways...

Pu3

Bidding and contracts/ No bidding, with or without contract

There has not been any bidding with Biogas Väst, making it easier for new partners to become partner in the project. This absence of bidding and contracts between the project partners constitute a main difference between a PPP such as Biogas Väst and *contract* PPPs. In Biogas Väst, contracts are not deemed important. Some partners think that contracts exist, other think otherwise...

Well, to be honest, I don't remember. We pay a certain amount every year, yes, and there are some writings about common development also, things like that, and Biogas Väst have some vision about the number of cars, the number of stations etc., within a certain period, that is what we're trying to fulfil...

Pr1

In fact, up to 2003, according to one of the project managers at BRG, there were no contracts between partners: it was more like a *Gentlemen's Agreement*, after discussion on the action plan and costs involved. Contracts have been added in the end of 2003 and only for the members of the steering group, mainly composed of national and regional partners, city companies and municipalities. Volvo did not sign any contract.

This absence of concerns for a formal relationship can be explained by the history of partnerships between partners used to collaborate together. In their research on trust in public-private partnerships, Ramonjavelo and al. (2006) argue that when *organizational and interpersonal trust mechanisms* exist, they have been established for a long time, while being strengthened by previous collaborations or complementary expertise.

Hierarchy controlled by the public sector/Coordination without hierarchy

While Biogas Väst is coordinated by Business Region Göteborg, none of the interviewees has said that there was a hierarchy between partners. Many believe that it is a cooperation project without a “boss” or some vertical hierarchy (11/17). The catalyst effect of the project is the main reason for building a project together, as resumed by one of the interviewees:

There was a need for something central to gather all the information and so on, so that’s why Biogas Väst Project started.

Pr4

More than half of the interviewees from the public sector (6/8) have stressed the importance of managing a project without hierarchy while interviewees from the private sector or the civil society did not mention it.

Public infrastructures and services/Project both with common objectives and specific interests

Biogas Väst is not a delegation of responsibilities from the public sector to private ones but, as was expressed by many interviewees, it is a project where partners share their expertise and resources to solve a common issue while also getting specific advantages:

...each of the stakeholders has in some way, their own goals... Volvo, they have the goal to be paid back for their investment of hundred millions SEK in the biogas and the bi-fuel cars. So they have a goal to get a commercial development. But that’s not the goal for Göteborg City. But the common goal for everyone here, I think, is to support, in some ways, to get a better environment and minimize that kind of problems. Everyone agrees here, in Göteborg area and in West Sweden, about that.

Pu15

Public partner(s) and private consortium/Network

While there are two fully private partners (Volvo AB and Volvo Car Corporation) and two hybrid partners (FordonsGas and LRF), the partnership structure is not based on a public partner(s) on one side and on a private consortium on the other side. The structure of this public-private partnership is closer to a network, where about 20 public and private partners collaborate together.

Other characteristic of Biogas Väst: Investments in or out of the PPP

The investment structure also shows that Biogas Väst is not a *contract* PPP. As said before, the money directly invested in the Biogas Väst is fairly low and used mostly for coordination, promotion and basic support for the project partners (4,5 M SEK). Most of the investment is done outside Biogas Väst by the partners in their own organization, in order to play their role in the project (ex: *bi-fuel* car and biogas production). This aspect of the project has only been mentioned by the interviewees from the public sector but constitute a main difference with a BOT or a PFI:

The difference with a traditional PPP, like building a highway, for example? In a highway construction, you know where it begins and where it ends, everything is planned in advance. Biogas Väst is a development process, you cannot even compare them. The construction of a highway means investments. There is no investment in Biogas Väst, it is a project where you develop contacts, there is no investment in the project, everyone does it for their own investment, and the money for the project is for administration purposes only.

Pu6

Now that it has been established that Biogas Väst is a *consensus* public-private partnership, there is still some analysis to do in order to define if it is a project which can be done according to sustainable development principles.

4.2 The definition of sustainable development from the interviewees

According to the data from the interviews, the definition of *sustainable development* revolves around the Commission Brundtland and the IUCN as main definitions. In 6 of the 17 interviews, the expression *sustainable development* has not been defined by included later on when the interviewees commented on the environmental, social and economy benefits of Biogas Väst, or by mentioning the impact of the project on future generations. Almost half of the interviewees did not define *sustainable development* (7/17) but rather commented on the sustainability of Biogas Väst (see table 4.3), which will be discussed in the next section.

Three out of four persons from the private sector and two interviewees from the public sector refer to the Brundtland definition in stressing the importance of maintaining, or even improving the quality of life for the benefits of the next generations. Other interviewees from the civil society and the public sector tend to

refer mostly to the IUCN definition that combines economy, society and environment. Some have a critic towards the moralistic approach from Brundtland:

I'm a little bit critical to the phrase... (The Brundtland phrase?) Yes... because that phrase has a tone that "oh... you should not do that and that and that...". Then if you do that, it will be bad for the next generation. I want to put it in the opposite way. If you will participate in this, then it will get even better for the next generation.

Pu2

Another interviewee argues that Brundtland and IUCN concepts of *sustainable development* have been distorted by capitalism, which would be a problem:

I think that in '87, it was a good thing, but still, it's been so used, it's been so manipulated to service anything and service some kind of rampant irresponsible gross capitalism, in the name of economic development to alleviate the problems...Economic is social, it's a social aspect but then, it shows only what economics needs, globally...

Sc13

Table 4.3 The definitions of *sustainable development* from the interviewees

PRIVATE SECTOR	
Pr1	To introduce a technology which doesn't destroy for the future generations . We should leave a better world to our kids than we were born in.
Pr4	Finding possibilities for people to transport themselves in the future , without questioning environment.
Pr11	Use the resources in a way that doesn't destroy it for the future generations
PUBLIC SECTOR	
Pu6	The possibility of combining the environmental progress, the industrial opportunities and the city growth .
Pu12	A development when you get more than what you produce.
Pu14	Social, economic and ecologic, environmental .
Pu15	A development where you combine the needs of human beings and men with the care of the Nature .
Pu18	In small steps, we're gonna make the world more and more healthy to visit and that we have to have a plan that we have to phase these fossil things - and whatever that are not good for you - out and in with a new biological thinking and products, so I think that's development in itself, because you have to say in small steps: "out with the bad, in with the good."
Pu19	The economy , the ecology and the social . None of them can be alone.
CIVIL SOCIETY	
Sc5	Development project where you have social, economic and environmental development in the long-term, not necessarily at the same time...

Sc13	Brundtland is probably the worst thing that has happened to sustainability. Sustainable development is all about economics. If economic development does not take into consideration what the environment, what the limitations are on the environmental, it's not sustainable.
Sc16	Sustainable mobility as a mobility that does not have a negative impact and does not reduce natural resources. The affordability of public transport is also important in sustainable mobility.

Two other interviewees from the private sector and the civil society use the definition of sustainable transport, a vision of *sustainable development* as sustainable transport, which aims at improving transportation while taking into account the environment and the future generations (Pr4, Sc16). See figure 1.6 for an explanation of *sustainable transport*.

4.3 Biogas Väst as a sustainable development project

Whether described according to the Brundtland or the IUCN definitions, or within the realm of sustainable mobility, everybody agrees that Biogas Väst is in accordance with the sustainable development principles.

4.3.1 Biogas Väst according to the Brundtland definition

Seven out of seventeen interviews refer to the Brundtland definition, which expresses concerns about the next generations. Some mention the importance of investing now not to transfer the burden to our kids, when costs will be way larger:

But we also have to consider economy on a long-term range: what is the cost, now and later, of the greenhouse gas impact? We thought it should be calculated and we've been answered that it's too difficult to do, but now, Lena Sommestad, Ministry of Environment, says we should, that long-term economics have to be used.

Pu8

Another interviewee argues that using biogas from waste is a problem if we want to reduce the amount of waste in the future:

I think there is one problem with taking care of our waste and putting it in the cars because what will happen that day when we will have succeeded with having not that much waste?... I also think that we must have a taxation system that makes it more expensive to produce than to use waste.

Pu2

The environmental, financial and social impacts of Biogas Väst have also been directly discussed with the interviewees. The objective was to study up to which level they thought that Biogas Väst was in line with sustainable development principles,

according to the IUCN definition. Each of these aspects is described in the next section.

4.3.2 Biogas Väst environmental benefits (IUCN definition)

According to the interviewees, there are numerous environmental benefits from Biogas Väst but some of them believe that the project has a low impact overall because it still promotes the automobile and does not reduce fossil fuels on a large scale. These interviewees believe that other actions must be taken in the transportation sector in a context where traffic and air quality questions are still present:

Even if the cars were all 100 % biogas, we'd still have congestion, traffic and pollution problems due to the amount of cars.

Sc17

As seen in Table 4.4, environmental benefits are part of Biogas Väst sustainability. Production and use of biogas is seen as an adequate but long-term solution when fossil fuels will have disappeared because it reduces CO₂ emissions (8/17).

Table 4.4 Biogas Väst environmental benefits

Interviews (17)	CO ₂ réduction	Better than ethanol		Reduces smog
		Yes	Same	
Public sector (8)	3	3	2	5
Private sector (4)	2	1	1	1
Civil society (5)	3	1	3	2
TOTAL :	8	5	6	8

Results also show that there is no common position on the ethanol VS biogas as most sustainable biofuel: some think that both biofuels are mostly equal (6/17) while almost the same number of persons think that biogas is more sustainable than ethanol (5/17). One of the interviewee believes that the value of biofuel should be based on a lifecycle analysis:

You have to look at the whole picture, the whole system from material of the cars, not only on the engine emission but...The lifecycle of the car. And if you look at that, ethanol goes back a little or rather much, because there is so much energy you have to put in the system.

Pu19

According to another interviewee, the ethanol market threatens the biogas market:

It's difficult to know if Biogas Väst will continue, because there is a big market for ethanol, which has a lot of market advance.

Sc 16

Eight out of seventeen interviewees see a link between the use of biogas and the reduction of smog periods and the improvement of air quality in general since the beginning of the 1990, when the first actions began to reduce pollution. Some have added that this situation is real even if road traffic has increased in the last 15 years.

Some environmental problems are not solved by Biogas Väst. Biogas would have a negative impact on water, increasing acidification (Pu8 and Sc16) since its use with cars emits NoX, thus indicating that the environment in the field of transport must be analyzed globally:

Should we prioritize local health by reducing particles and NoX or global issues with reducing CO₂ emissions? The Göteborg transport plan for 2050 focuses on CO₂ reduction and when you reduce CO₂ emissions, you solve other problems as well.

Sc16

4.3.3 Biogas Väst economic benefits (IUCN definition)

As seen in Table 4.5, according to the interviewees, the economic benefits from Biogas Väst are many: new local jobs, exportation of expertise, use of the local “laboratory” to test new products – in this case *bi-fuel cars and busses*- and building infrastructures that helps to support local economy:

A new market branch, I mean, all the people that will work with the biogas production and producing biogas vehicles and so on, they will go to a new branch, so to say. And you also produce economic growth in that way, because if you sell more cars running on biogas, you need more biogas production plants and so on, you will get a very good sustainable economy.

Pu15

Table 4.5 Biogas Väst economic benefits

Interviews (17)	Local jobs	Exportation	Laboratory	Support to local economy
Public sector (8)	3	4	2	3
Private sector (4)	2	3	0	2
Civil society (5)	0	1	0	1
TOTAL :	5	8	2	6

According to some, a project such as Biogas Väst increases regional assets and competences in Västra Götaland (Pu2) while other question the sustainability of continuous growth (Pu3, Pu15). If long-lasting jobs are also a concern for some (Pu3), building biogas infrastructures in every municipality can also cause problems:

Yes, but if one municipality invests in huge, and huge and huge (infrastructure), Borås does the same and Trollhättan does the same; in 10 years, when the waste is less, then it's standing there, with enormous infrastructure which you don't need.

Pu2

Not everybody agrees with that comment because local production of biogas can also be considered an asset to increase local energy independency (Pu8), which has a positive impact on the social development of communities.

4.3.4 Biogas Väst social benefits (IUCN definition)

As seen in table 4.6, three of 17 interviewees could not comment on the social benefits of Biogas Väst. All the others have said that one of the main objectives of Biogas Väst was to create a lasting effect on citizens by giving them a way to contribute the improvement of the environment, which is a strong success factor (14/17).

Almost all the interviewees from the public sector believe that citizens can understand the relation between managing their waste and the improvement of air quality. This would have a domino effect on improving the environmental practices in general, including a more effective individual waste management such as getting rid of batteries in a proper way (Pu6). By being able to act positively on their own environment, citizens are more inclined to change their behaviour and opinions in favour of the environment, which makes it a social benefit:

If you look at the people at the refuelling stations, they can fill it with biogas, they think differently, that's the social...

Pu19

Table 4.6 Biogas Väst social benefits

Interviews (17)	Do not know	Empowerment	Better waste management	Gender Equality
Public sector (8)	1	7	7	2
Private sector (4)	0	4	0	0
Civil society (5)	2	3	0	1
TOTAL :	3	14	4	3

Social benefits also include the question of gender equality. Two interviewees, a man and a woman, believe that Biogas Väst and the energy sector in general would benefit by including more women, without commenting more on the subject (Pu8, Sc13). To underscore this remark, it is to be noted that only women - three interviewees – have mentioned the importance of studying the impact of biogas on health to make sure that biogas is not a health hazard, which paves the way for new research.

Energy independence is also been seen as a social benefit from Biogas Väst. (Pu19).

To sum it up, according to the interviewees, Biogas Väst is a sustainable *consensus* public-private partnership. Thus hypotheses can now be validated or rejected.

4.4 The validation of the research hypotheses

Primary and secondary data can be analyzed to validate or reject the research hypotheses in order to answer to main research question. While the first hypothesis revolves around the PPPs in sustainable development and the role of the civil society, the second one is based on the motivation from the City and its large industry to get involved in such partnerships in order to position themselves at the international level.

4.4.1. The validation of the first hypothesis

The first hypothesis reads as follow:

In order for PPPs between the City and its industry to be sustainable, members of the civil society must be included as partners.

According to the interviewees, the fact that the civil society is not included in the Biogas Väst does not contradict its sustainability: the general public is not targeted as clients for the *bi-fuel* and biogas vehicles or the biogas markets, at least in the first stage (4/19). One of the interviewees from the private sector has mentioned that the first thousand cars *bi-fuel* were mainly produced to replace the municipal and regional fleets (Pr1).

Interviewees also mentioned that Biogas Väst should be marketed at the international level (11/17) rather than for the population (5/17), the Swedish politicians (4/17) or the private sector (4/17). The absence of civil society partners does not seem to be of concern. Two interviewees think that only financial partners should participate in decisions:

I think that the NGOs do a very good job but you can't sit on this kind of project if you don't put on your own million crowns, so to say. I think that the enterprises and the municipalities, they shouldn't accept this. Of course, you could have a dialog with them or so on, but I mean, if you say something on the meetings and don't have any money to put in the project, then, there is a risk that they won't listen as much as they'd have accepted.

Pu2

Only one person, from the civil society, has said that the project will be sustainable when citizens' participation is included:

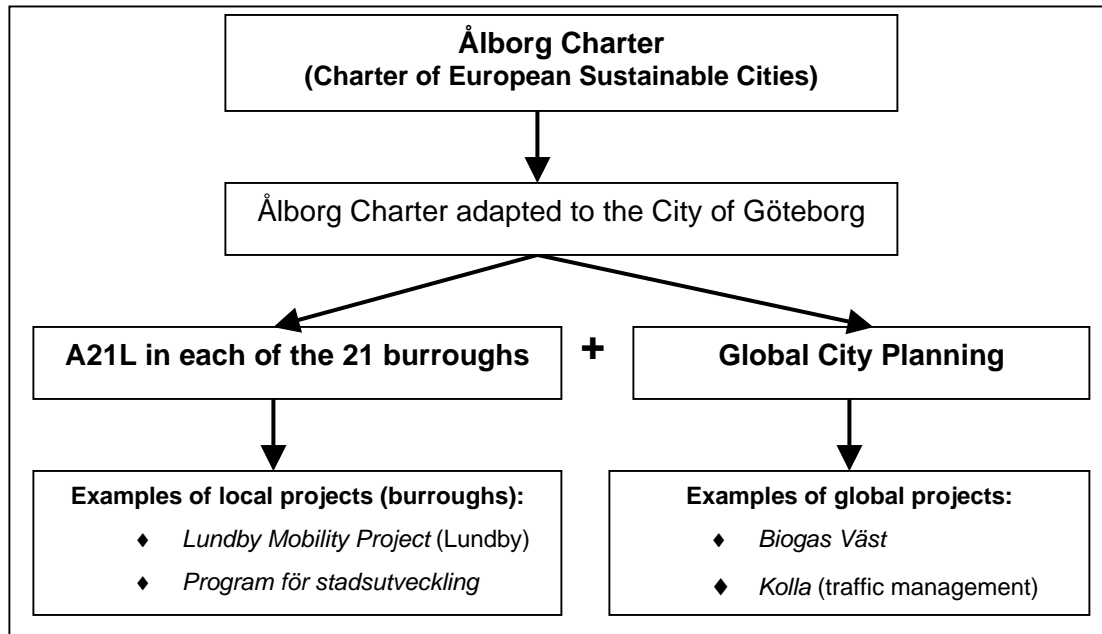
I don't know too much about the project but they need to begin to talk about environmental limitations, putting that as a kind of priority, and also increasing participation. Then I would say that it's a sustainable development project.

Sc13

As said before, Biogas Väst is not a project within the realm of a Local Agenda 21 but is rather considered as an action to reach an objective from *Göteborg 21*, a version of the Ålborg Charter adapted to the City of Göteborg. *Göteborg 21* has 10 orientations and some projects such as Biogas Väst are planned at the City level

while the 21 burroughs of the City have their own Local A21 that also include an action plan (see figure 4.1).

Figure 4.1 Göteborg's sustainable development structure



In *Göteborg 21*, Biogas Väst is mentioned as a solution to reach the objectives from section 10. The section is called "LOKALT TILL GLOBALT – Vi åtar oss att ta vårt globala ansvar för fred, rättvisa, jämlikhet, hållbar utveckling och klimatskydd." Biogas Väst is mentioned as a solution to decrease substantially the energy consumption from the population of Göteborg, to improve the environment and to create new jobs. Biogas Väst is also seen as a solution for two of the three main priorities in the section on international development: development of local activities and industry development. It is thus a project to help Göteborg in its will to reach its sustainable development goals such as stated in *Göteborg 21*, a local version of the Ålborg Charter. Since the Charter was written by people representing all sectors of almost a 100 cities – private, public, civil society - at the European level and then adapted without real changes at the City level, it cannot be said that the civil society has not been included in the process.

The first hypothesis can thus be validated with a precision:

PPP projects can be sustainable even if the civil society is not directly involved if those projects are used as tools to reach the objectives of the sustainable development action plan as decided by all partners, including citizens or the civil society.

4.4.2. Validation of the second hypothesis

The second hypothesis:

Local public-private partnerships can be used to position both the City and its large industry at the World level as leaders in their respective fields and in conformity with sustainable development principles.

As discussed in the first chapter, many elements can explain the interdependence between the City and its large industry. In the case of Göteborg and Volvo, the industry is an important source of local pride and an attraction for many related enterprises while also offering thousands of local jobs. Volvo is a valuable asset to help the City of Göteborg assume its municipal responsibilities because of its economic impact; its international growth has an impact on the City itself. But Volvo also collaborates with the City because the local environment is an important place to test new products to be later exported. Enhancing the local quality of life has also a positive impact on attracting and retaining highly-skilled employees who are essential for Volvo's competitiveness and hard to replace. So, both Göteborg and Volvo have advantages in working together since the citizens' welfare has an impact on the industry and vice-versa. To validate or reject the hypothesis, the elements of interdependence between Göteborg and Volvo must be analyzed in order to understand motivations of both partners to position themselves together at the local and the international levels.

4.4.2.1 Göteborg and Volvo's interdependence at the local level

Many of the interviewees believe that Volvo must play a role in enhancing the quality of life in Göteborg (6/17) because many people from Göteborg work at Volvo and wish to be proud of the company they work for. Volvo's involvement in mobility questions is seen as very important because they produce transport vehicles but also to attract and retain their employees:

And working with the mobility here in Göteborg is very important, because we know that there are people here who say: I would like to work for Volvo but I

will not because the transportation is too bad, it's too hard to travel up here to Hisingen, it takes too much time.

Pr11

According to an interviewee from the public sector, there is a very strong interdependence between the public sector and the transport industry in Sweden. The growth of the Swedish transport industry at the international level as a direct impact on the possibility to maintain public services:

In Europe, it's about 25 % of the economy that is car factories and car-related industries and so on... In Sweden, it's 50 % of the economy and if you look in Västra Götaland, it's even more, we are extremely dependent on...we have to look up on that, to make sure that industries like Volvo should be even stronger on the world market, that is one of the most important issues...But I think we can say that we have changed, we have stopped looking up at Volvo and say "Why does Volvo have to be that big?" Now we're saying that they have to be that big otherwise, we won't have any public sector anymore in this part of Sweden.

Pu2

According to the private sector interviewees, Volvo also needs its public partners, not the least for credibility reasons.

I guess Swedes, and specially people in Gothenburg, they really expect us to deliver both on safety and environment and... I mean we are a global company but if we're not respected in our own town, then, we don't have any chance at all in the global field.

Pr4

In the case of AB Volvo that produces biogas busses, the fact that public transport authorities work with them is essential. Both public and private partners play their role in lobbying for Biogas Väst to get governmental support for biogas or to convince other municipalities to join in. As mentioned by one of the interviewee from the private sector:

...we are one partner...from outside...I really don't think we should have managed that ourselves, because it is quite a big step to go as a global...manufacturer to go to communities and talk to them, specially when we need agreements with many municipalities...

Pr4

Both an interviewee from the public sector (Pu6) and one from the private sector believe that the credibility of each partner benefits the other:

I think that's very important for the City to be able to say: we have Volvo, Volvo thinks the same and when we meet, we can also say that the City of Göteborg thinks the same way.

-It's the two of them that makes them stronger?

Yes that's it.

Pr11

The interdependence between the Göteborg and Volvo also exists at the international level.

4.4.2.2 Göteborg and Volvo's interdependence at the international level

At the international level, public-private partnerships can be a winning formula when the positioning strategy of the City and its large industry uses the same assets, as can be seen with Göteborg and Volvo both wanting to be seen as leaders in transport and environmental issues. For Göteborg, 12 of the 17 interviewees, including public servants but also local and regional politicians, believe that Göteborg has been able to transform itself from a polluted industrial city (i.e. bad in environment) to a post-industrial city that is an environmental leader that can now promote its high quality of life:

Well, of course, they have wanted for 20 maybe 30 years to change from the dirtiest city in Sweden to those who have most progressed in environmental questions, I'm sure that they've had this ambition for many years now and I mean, they are on their way to succeed, really.

Pu2

While the status of Göteborg as a *Leading City in Transport* is easy to understand because of its numerous naval and terrestrial transport enterprises, the interviewees believe that Göteborg's wish to become the *Leading City of Sweden* is not in contradiction with the fact that Stockholm is the first city, i.e. the capital. The reason is that the positioning is economic and not political. According to some interviewees, second cities, often post-industrial, are often more successful than capitals. Those second cities would be more *open air* and their overall ambiance more relaxed:

It's nicer to live in Toronto than in Ottawa, it's much nicer to live in Göteborg than in Stockholm. So, capitals are very seldom, often when you have a split like that, they are not the most attractive cities to live in. Göteborg is a more

successful city [...] people I think, are more pleased with the city [...] people tend to stay longer, there is less influx, out flux of people...

Sc5

The interviewees have different views of the image that Göteborg wishes to promote at the international level. As seen in Table 4.7, their opinions can be classified in four non exclusive categories: *Leading city (in general)*, *Leading city in transport*, *City with a high quality of life*, and *environmental city*.

Those opinions are interesting since it suggests that projects such as Biogas Väst contribute to the international branding of the City. It echoes the findings from the literature stating that a vibrant local environment is essential to get World City status.

Table 4.7 The perception of how Göteborg wants to be promoted internationally

Themes mentioned in the interviews	Leader	Leader in Transport	High Quality of Life	Leader in Environnement
Private partners				
Event City, Friendly City			X	
Business and Environment City				X
Sweden door to the World	X			
Leader in Sustainable Transport	X	X		X
Public partners				
Now a Clean City			X	
Leader in Sweden and Internationally	X			
Best Swedish City for Events and Education	X		X	
Avant-garde Transport City	X	X		
Business and Environment Avant-garde City	X			X
Event City that helps the industry to clean itself up			X	X
Knowledge City				
Société civile				
Event City			X	
City leading in environmental issues	X			X
Green City				X
Growing City with a High Quality if Life			X	
Center of Avant-garde in Transport and Environmental issues	X	X		X
TOTAL	8	3	5	7

Volvo is a regular partner to Göteborg – along with other industries – for urban projects such as the Opera House, some museums, support of the Symphonic Orchestra, etc. The fact that Göteborg is Volvo's cradle might explain this historic collaboration between the public and private sectors but this status as the main City employer can also be seen as a constraint:

Volvo is burdened a bit by *Think global, act Göteborg*. That's the saying of Volvo around the World. They need to have something good in their own market.

Sc5

For some interviewees, Biogas Väst is too small to have a real impact on Volvo, while some others believe that such projects are essential for Volvo to be considered at the international level as an innovative enterprise. According to one of these interviewees, such projects reinforce Volvo's position as a world leader in safety issues, by taking care also of the environment:

You can't have that motto "Volvo for Life" if you don't care about the environment. Life equals environment, that's right.

Pu19

According to an interviewee from the private sector, Volvo Cars' involvement in environmental partnerships such as Biogas Väst has a positive impact on Ford, its owner. Ford has given Volvo the responsibility of developing hybrid vehicles, first for Volvo cars and then for other Ford brands in Europe²²:

Almost half of the interviewees believe that a public-partnership project such as Biogas Väst helps to reinforce the environmental credibility of both partners at the international level (9/17). Some also said that since Göteborg and Volvo must be models since they both have an international environment prize:

Five years ago, we started a new concept, the International Environmental Prize. But you can't start a prize like that if you haven't done anything yourself, you have to do something.

Pu19

All interviewees agree on these matters, thus validating the second hypothesis to the effect that local public-private partnerships can be used to position both the City and

²² Entrevue with Fredrik Arp, Volvo Cars Corporation CEO, on environmental investments at Ford & Volvo. <http://www.theautochannel.com/news/2006/07/01/013417.html>

its large industry at the World level as leaders in their respective fields and in conformity with sustainable development principles, at least when a project is a *consensus* PPP. Although these PPPs can be used by the partners for a common international positioning, exporting them can become a challenge.

4.4.2.3 Exporting *Consensus* PPP such as Biogas Väst

Contract PPPs such as a BOT for a highway project or a PFI for a hospital will be mostly the same everywhere. The characteristics of the *contract* PPP for the Highway 25 in Montreal and the one used in the A-Train in Stockholm have many similarities. This is not the case for *consensus* PPPs because they are based on local characteristics and local interdependence between public and private partners, sometimes also including civil society members. According to the interviewees, Biogas Väst has been possible because there was already a well-established local culture of collaboration between Volvo and the City of Göteborg, thus making it harder to export such a project in a context where the City and the industry do not have the same history. If not impossible, the partnership structure might have to be adapted to the new local context. There is no consensus between the interviewees to the effect that Biogas Väst can be exported, whether in Sweden, in Europe or elsewhere.

According to some, the structure of local collaboration is not the only cause that can hinder the exportation of a *consensus* PPP. The success of the project also depends on the regional and national, even supra-national support, which is the case with Biogas Väst. An equal balance of power and influence between the partners is also very important. Many of the people interviewed believe that in France, Germany or United States, the balance of power is less equal between the private and public sectors than with Biogas Väst in Göteborg, which makes it more difficult to export the project. Situation would be more feasible in other Nordic Countries or in Canada, where there is a good balance between a strong public sector and private enterprises.

To conclude the analysis from the data gathered in the interviews, it is noteworthy that, while there are no important differences between the answers of each type of partners on many aspects of the project, some specific questions have brought different views between interviewees from different sectors.

4.5 The differences of vision between interviewees representing the public and private sectors, and the civil society

There are important similarities between the answers from the interviews. First, everybody agrees that there is cooperation between the partners. Secondly, the opinions on issues such as exporting the project, the international positioning of Volvo and Göteborg or the positive impact of the project on the local economy were not different depending on the sector the interviewees were representing. In those cases, the differences in visions and opinions will depend of the person and not the sector they represent (public, private, civil society).

On the other hand, depending of the sector, the perceptions of what triggered the Biogas Väst project differ: interviewees from the private sector believe that the project has been implemented by TRUST, the group of public and private partners working on traffic issues in large cities, which seems to be “the correct answer”. Those from the public sector believe that cities already involved in the development of biogas have launched the project. Those from civil society believe that it could have been the municipal authorities, Volvo and the biogas production enterprises, visionary individuals; many of them simply could not guess.

Then, when the question is asked on what should have been different in the project, people from the private sector would have liked the project to evolve more rapidly. Those from the public sector believe that there should have been more information to the population but mostly to other municipalities, enterprises and the Swedish government. People from the civil society would have liked to see a wider variety of partners in the project, such as the public transport organizations, or environmental and women groups. They also believe that Biogas Väst should have included other issues such as the impact of biogas on people’s health or the use of cars in general.

There is no consensus on the importance to promote the project to the population. Those who come from the private sector believe that the project was not intended for them, at least in the first phases. People from the public sector think that project has to be promoted for its benefits on the environment and the development of local empowerment while those who come from civil society believe that the population is

not really interested in the project but that the Biogas Väst project raises awareness on the issue of waste management.

Why are the answers so different, depending on the sector? To understand this, one must remember that *consensus* PPPs combine common goals and specific objectives. For Volvo, for example, *bi-fuel* cars or biogas busses are only one of their many products while being strategic enough to satisfy a very demanding clientele when it comes to environmental or sustainable development issues. For the public sector, the biogas issue is part of a much larger concern to reduce pollution while improving the quality of life in general for the citizens. A project such as Biogas Väst can help public partners to play their role as a model to encourage citizens to act more responsibly. Such projects are essential to strengthen their collaboration with the large industry, in order to develop economic strategies. Finally, for those who come from civil society, Biogas Väst is one of many projects in a vision of economic development that wants to become more sustainable.

In conclusion, studying Biogas Väst has been useful to confirm that *consensus* PPPs can be used in sustainable development projects between the City and its large industry in a context of globalization. When the PPP is defined as a way to reach sustainable development goals such as those stated in a Local Agenda 21 or, in an adaptation of the Ålborg Charter, as in the case of *Göteborg 21*, there is no absolute need for citizens' participation since they have been included at a former decision-making stage. Finally, the City and its large industry get involved in such PPPs because a common positioning at the international level benefits both partners.

4.6 Discussion

The analysis has brought forward the pertinence of sustainable public-private partnerships when the City and its industry position themselves together on the international scene. The results have nonetheless shown two main challenges. The first is that it is very important to recognize that each partner has specific needs and interests. The fact that the specific goal from a partner has not been reached – such as sufficient profits for Volvo Cars for example – threatens the PPP, or at least forces the other partners to adapt from it.

Secondly, market-building projects should be supported according to their intensity of sustainability. Supporting the project according to the intensity of sustainability can be an interesting way to reduce the constraints of the market that can have a negative impact on the project. Finally, although it was not mandatory to be considered a sustainable project, the possibility of including civil society members as partners in Biogas Väst is worth looking at because of its potential impact on supporting such projects.

4.6.1 The importance of recognizing the partners' specific needs

While the economic health of the municipalities and some private partners such as FordonsGas and LRF depends mostly on the local market, the situation is very different for Volvo whose market is international.

Less than a year after the period which has been studied in this research, the newly appointed CEO of Volvo Car Corporation, Fredrik Arp, announces that *bi-fuel* production will cease gradually. The reason is lack of profits based on structural deficiencies: the low level of *bi-fuel* car sales in the last 10 years is partly caused by too few biogas stations out the Western region of Sweden²³. In order for the manufacturer to recoup its investment, infrastructures for biogas production and distribution must multiply very fast in Sweden and in the rest of Europe. This includes a major financial participation from the Swedish government. Modifying laws in favour of projects such as Biogas Väst is also essential. Since the lack of sufficient infrastructures seems to be the main reason for Volvo Cars to get out of the partnership, it asks the question of the fragility of the *consensus* PPP in an

²³ Volvo to Withdraw Bi-fuel Models? See appendix D.

international context. One can also reflect about the impact of globalization on local partnerships and the integration of the projects in sustainable development planning, both at the local and international levels.

When Volvo Cars announced that it would cease *bi-fuel* production, Business Region Göteborg, people from the natural gas industry and a group of municipalities teamed up to question the decision. They argued that not only the sales of ecocars were increasing rapidly but so did the construction of filling stations and biogas production centers²⁴.

Volvo Car Corporation did not abandon the international development of environmental products but has moved from *bi-fuel* cars to ethanol and hybrid electric cars. Volvo Car Corporation is thus not taking decisions that would go against Göteborg wish to position itself at the *avant-garde* of the cluster «business and environment»; Volvo Car Corporation's new choices are still in line with the Göteborg's vision of developing *green* technologies in transport. And even if Biogas Cities is interrupted for a period²⁵, the interdependence between the City and its milieu is still important. As mentioned by Niklas Gustavsson, Volvo Cars spokesperson for environmental affairs:

*"Volvo Car är beroende av att Västsverige kan erbjuda en utvecklingsvänlig miljö i världsklass. Allt handlar om att skicka rätt signaler. Bestämmer sig Ford för att satsa på forskning och utveckling här rör det sig om stora pengar..."*²⁶

That situation is very important in the realm of this research: are public-private partnerships, mandatory for the City and its industry to compete in a context of international competitiveness, are also threatened by the same globalization? It seems to be the case.

For many years, transport manufacturers have been exposed to acute competition at the world level, forcing them to develop alternative technologies to petrol very rapidly. This obligation to develop innovative products at a very fast pace seems to have an impact on the choice of less complex "green" solutions. As explained by

²⁴ *Swedish Municipalities Protest Volvo Bi-fuel Withdrawal* and *Volvo borde försätta med gasbilarna*, ibid.

²⁵ Discussion when the results were presented, Septembre 11 2007 at Business Region Göteborg.

²⁶ "Västsverige kan bli ett Hybrid Valley", *Handelskammaren*, June 4 2007. www.handelskammaren.net/item.aspx?id=4986. Read June 25 2007.

Niklas Gustavsson: «*Gasbilarnas största problem var infrastrukturen för tankställen...Sådana användarproblem uppstår inte med hybridtekniken*²⁷».

Some have another explanation. According to one of the interviewee at the presentation of the results of this research in Göteborg, in September 2007, one of the problems is that Volvo Car Corporation is not a local partner anymore. Since the sales of Volvo Cars to Ford in 1999, all decisions are taken in the US by Ford, hampering the relationship between the car manufacturer and the other partners of the project. To try to resolve the issue in such a context, another person from the group suggested that the partnership should include other biogas car manufacturers such as Volkswagen or Opel. By doing that, building of production and distribution infrastructures for biogas could be speeded up, thus encouraging Volvo Car Corporation/Ford Motor Company to produce *bi-fuel* cars again.

At first, this hypothesis seems plausible since Volvo Car Corporation still considers that biogas has many advantages; as said in the press release, the decision could be reversed if the number of filling stations increases dramatically (see Appendix D). But while both 2004 and 2005 Corporate Citizen Reports from Volvo Cars mention that they are involved in biogas projects such as Biogas Väst and Biogas Cities, 2006 Volvo Car Corporate Citizen Report does not contain any mention of biogas as biofuel, which confirms the CEO's decision to stop momentarily or definitely the production of «*bi-fuel*» cars²⁸.

Volvo Car Corporation's decision did not hinder Biogas Väst from being exported or to continue its operations. Three reasons can be stated to explain this fact: while not condemning Volvo Car Corporation decision to stop the *bi-fuel* production, AB Volvo still supports the development of biogas busses and trucks (see Appendix D) and other car manufacturers also support the development of the biogas market. So Business Region Göteborg, whose website used to promote *bi-fuel* Volvo cars now mention AB Volvo's initiatives and other car manufacturers such as Volkswagen²⁹.

Secondly, biogas production development projects as biofuel but also as heating fuel for industries and apartments are in full swing. This market expansion is supported

²⁷ "Västsverige kan bli ett Hybrid Valley", article in Västsvenska Industri & Handelskammaren, June 4, 2007.

²⁸ <http://www.volvocars.com/corporation/Sustainability/SustainabilityReport/default.htm>

²⁹ www.biogasvast.com read on December 10 2007.

by all level of governments, from the local to the national levels. For example, Göteborg Energi aims at replacing all its natural gas production with biogas by 2050³⁰. Finally, rather than Biogas Cities, exporting the project is done with Biogasmax, a EU project where cities wishing to develop biogas as biofuel network together.

All these initiatives demonstrate that Biogas Väst was able to evolve in order to succeed but in a context where such projects would be supported according to their overall sustainability– the same way it can evaluate with a life cycle analysis – the loss of a major partner might have been avoided.

4.6.2 A public support based on the projects' overall sustainability

The IUCN definition of sustainable development states that financial, social and environmental issues must be addressed together while the Brundtland definition expresses the concern that future generations must be taken into account. As Sweden and all its municipalities and regions wish to grow in a sustainable way, it makes sense to support projects publicly according to their level of sustainability. Actually, this is not the case in Sweden.

While it is true that some governmental subsidies encourage the consumers to buy ecocars (see definition at Appendix E), those cars are evaluated in regards to their CO₂ emission without any consideration for their lifecycle or for social concerns. The Swedish government takes into account the fact that bi-fuel and hybrid electric cars are more costly; additional financial support aims at balancing the market prices for those in order to level them with the price regular cars³¹. But this support has not been planned to favour biogas over other *green* solutions such as ethanol. Social and local economy aspects, which are part an intrinsic part of *sustainable development*, are not accounted for in the governmental support of *ecocars*.

If the three pillars of sustainable development had been taken into account in the support of the Swedish government for *green* cars, biogas cars would have been supported more widely than ethanol or hybrid electric cars, the two choices that Volvo Car Corporation made instead of pursuing the production of *bi-fuel* cars.

³⁰ http://www.goteborgenergi.se/X_Gassatsning_for_renare_luft_DXNI-377850_.aspx

³¹ Explanation from an e-mail from Gunnar Ingelman from Fordonsgas to the researcher, December 17 2007.

While the biogas production includes many considerations of sustainable development such as the building of local empowerment, waste management awareness or job creation – which is not the case with ethanol or the electric hybrid including such criteria in governmental support policy for ecocars might sound like an utopia. Nonetheless, this logic makes sense when public partners at all levels want to develop innovative markets based on sustainable *consensus* PPPs such as Biogas Väst to position themselves as *avant-garde* on the international scene. The overall objective of such strategies would then be to avoid a situation where the most innovative and sustainable market development are hindered or replaced by less sustainable solutions.

There is still a long way to go. Even if only environmental issues are considered (rather than the whole idea of sustainable development), choosing the optimal green propulsion mode for vehicles is far from simple. While Volvo Car Corporation has favoured ethanol and hybrid electric as environmental solutions rather than biogas, AB Volvo still uses biogas along with other ecosolutions that can be used alone or in combination: hybrid, biodiesel, DME, ethanol, synthetic diesel, hydrogen. Many of these *green* solutions involve building of production and distribution infrastructures, thus reinforcing the interdependence between the manufacturer and other partners, as explained by Bruce Mulliken, from Green Energy News:

Many solutions will work but all need investment in infrastructure, something that vehicle manufacturers can't do. Determining which solution, which fuel, may now be more of a problem than finding the fuel itself. The decision may come from the bottom line of the cost and carbon emissions comparative analysis: Which is the least expensive and yields the lowest greenhouse gas emissions? Behind the scenes, vehicle manufacturers like Volvo must be frustrated. They seem ready to move forward, are aware of the ticking clock, but can't on their own determine which fuel to go with. Almost daily news tells us time is running out on climate as well as Middle East petroleum. Vehicle manufacturers read the news too.³²

If it is to be believed that the environmental and social problems linked to oil and petrol will force the industry to find alternative solutions that are more sustainable, one can imagine that *consensus* PPPs based on interdependence will become more frequent. These public-private partnerships can be seen as solutions to link the offer

³² <http://www.enn.com/sci-tech/commentary/22513> consulté le 17 décembre 2007.

of *green* solutions for demanding customers while making sure that the infrastructures are there to support this new market. This means that both public and private partners must be visionaries while being supported by their electorate – in the case of public partners – and their stakeholders – in the case of private partners (consumers, environmental groups, governments, etc.). That is where civil society members and citizens can play a strategic role.

4.6.3 The impact of civil society members in sustainable projects

Studying Biogas Väst has not made it possible to assess if the civil society could have used its political power to induce the government to reinforce laws and subsidies in favour to this new market. As Biogas Väst has not been widely promoted publicly to either citizens or Volvo individual consumers, the impact of their support cannot be verified. If some governmental subsidies for ecocars aimed at individual consumers, they have not been targeted as political or financial actors by the public and private partners in Biogas Väst.

According to many interviewees, Biogas Väst is not widely known by the citizens of Göteborg. There had been no marketing tools targeting the population and the biogas busses are not identified as such. If FordonsGas supplies information on the advantages of biogas on its website, its customers are mainly those who already use *bi-fuel* cars.

Even though they have not been included, citizens play an important role at almost all levels of the project: they provide the residential waste for biogas production, they can buy *bi-fuel* cars and they are needed for political support by political parties supporting such projects.

If Volvo Car Corporation's decision to stop the production of *bi-fuel* cars is based on the low volume of sales, the fact that consumers and citizens in general were not targeted in the promotion of the project can be questioned. Results might have been different if there had been a promotion of *bi-fuel* cars linked to sustainable aspects such as the importance of buying locally to support local jobs while improving the quality of life both for rural and urban partners, etc. It might be thus strategic to increase level of public awareness for such projects while reinforcing the political and

business impacts of civil society members and citizens so that PPPs such as Biogas Väst can be supported on a much wider scale.

Consensus public-private partnerships might thus benefit from including civil society members, as it has been done with the Nordic Partnerships. These *consensus* PPPs can be used to develop sustainable markets.

For example, in the case of Biogas Väst, some NGOs could have been included to help promote the project. One might think of *Gröna Bilister*, a NGO of ecocar owners, who could have been a partner that can offer strategic advantages such as broader discussions on comparison between biogas and other solutions linked to ecocars: hybrid electric, ethanol, low petrol consumption. The NGO could also have offered some insights on perceptions and reactions from the consumers buying *green* products. Being a group of ecocar owners, the NGO could have offered help to lobby in favour of biogas as a more sustainable biofuel. Promoting the project could have been done on a larger scale, especially with environmental groups and other civil society members.

If including some groups from civil society might have been a benefit for Biogas Väst, *consensus* PPPs would benefit from being included in the planning of sustainable development at the city level and promoted as such.

4.6.4 The inclusion of *consensus* PPPs in sustainable city planning

It has previously been shown that projects such as Biogas Väst do not have to include citizens' participation if they are done in order to fulfill sustainable development goals from a local adaptation of the Ålborg Charter such as Göteborg 21. Some precisions are needed in order for this statement to be accurate.

While citizens are included at the planning process of a Local Agenda 21 to define sustainable development priorities, those from the Ålborg Charter have been defined at the European level in discussions where members of the civil society were included. Back in Göteborg and following the resolution from the town council³³, the

³³ <http://www.goteborg.se/prod/G-info/kskfhandl.nsf/FramesetWebKS?OpenFrameSet&Frame=Main&Src=%2Fprod%2FG-info%2Fkskfhandl.nsf%2F38bae1c1059a1422c1256ce9003a9253%2F35e21a351c465da4c12570d000555bd8!OpenDocument%26AutoFramed>

local adaptation of the Ålborg Charter has been done by a team of city professionals who presented it to the 21 committees responsible for the Local Agenda 21 at the burroughs' level. These committees have been assigned to fulfill objectives at their level, such as can be read in the minutes of Kortedela's environmental committee, which includes civil society:

«Kommunen har skrivit på överenskommelsen och väntas komma med riktlinjer och handlingsplan om hur stadsdelarna ska jobba så att Ålborgöverenskommelsens åtaganden integreras i stadens processer.»³⁴

So, members of civil society are included at the beginning and the end of the process without being the same members or playing the same role: while those who participated to the decision were civil society members representing European citizens, those representing the 21 Göteborg burroughs must only define action plans to reach the goals of sustainable development that have already been defined at the European level. Those local committees have not been invited to vote on the Göteborg 21 priorities or to present some other priorities³⁵.

This situation does not mean that Biogas Väst is not a sustainable project as according to the Brundtland and IUCN definitions. Nonetheless, the importance of a involving citizens' participation as stated by Gendron (2005) and Thuillier (2005) could have been positive, both for business and democracy reasons: by asking the citizens and other civil society members to validate the principles and action plan of *Göteborg 21*, Biogas Väst could have been more widely known and could have gain more support.

It is surprising to note that, although *Göteborg 21* and its action plan has been approved in 2004 by the town council and Biogas Väst is mentioned as a way to reach its objectives in sustainable development, none of the interviewees, including those representing the City and its public companies, have mentioned that Biogas Väst as part of *Göteborg 21*. This means that the planning of sustainable development at the City level and the projects to fulfill its objectives are not that easily linked together. Such planning documents might not then be the most efficient

³⁴ «Kommunen har skrivit på överenskommelsen och väntas komma med riktlinjer och handlingsplan om hur stadsdelarna ska jobba så att Ålborgöverenskommelsens åtaganden integreras i stadens processer.» Traduction de l'auteur.

³⁵ Some consultations might have been done locally but the research cannot confirm or infirm this fact.

tool to insure that business projects take into account social and environmental issues; for Göteborg, the wish to promote itself as a leader in environmental technologies in the field of transport might be more strategic but there is a risk that business projects will include concerns for the environment without considering its social impacts, including citizens' or NGO participation to the decisions, but also the fact that projects could be supported according to their level of sustainability.

The research has nonetheless shown that some types of PPPs between the City and its industry in the context of globalization can be sustainable.

CONCLUSION

*«More than climate changes and pressures on natural resources, it is the absence of a «world architecture» that can mobilize resources to solve problems that threatens humanity.»
Ricardo Petrella³⁶*

The objective of this research was to define if public-private partnerships between the City and its large industry could be used to reach sustainable development goals in a globalization context. In order to answer that question, PPPs have been classified in two main categories: *contract* PPPs and *consensus* PPPs.

The research has shown that although there are many definitions and concept of the expression *sustainable development*, there is some agreement to the fact that the most common definition is a mix of the Brundtland and IUCN definitions, i.e. that decisions and planning must take into account the actual and future generations and include environmental, social and economic concerns. By trying to assess if PPPs can be sustainable, it is important to realize that public and private mandates and interests differ and that their relationship with civil society also differs.

Volvo Car Corporation's decision to stop producing *bi-fuel* cars shows the difficulty of supporting innovative commercial practices in a context where external constraints, both at the local and the international levels, threaten such projects. At the local level, other studies like those from Willander on consumers' motives for selecting *ecocars* could be done to find out if raising awareness on sustainability PPPs such as Biogas Väst PPP has a positive impact on more "sustainable" consumption.

³⁶ L'entrevue – Redessiner l'architecture mondiale. Le Devoir. November 11 2007.

At the international level, UN Commission on sustainable development urges its partners to act in a global view and at all levels of governments, including the international level. The Commission has asked that «...*environmental norms be reinforced at the national level, and it has insisted on the necessity to diminish the subsidies that harm the environment and create market distortions.* » (Vaillancourt, 2002:4). As local, regional, national and international governments will implement policies that reinforce sustainable development, more *consensus* PPPs, in line with sustainable development principles, will be able to emerge and grow successfully.

This research has focused on public-private partnerships between the City and its large industry in a context where globalization reinforces their interdependence so that there is a mutual interest in collaborating together. These partnerships can be an appropriate system to reach the objectives of a City's sustainable development planning such as Local Agenda 21, which process is centered on the citizens. One of the objectives of this research was trying to assess if the *consensus* PPPs can be used when the City and its large industry want a common world positioning based on common assets such as transport and environmental innovations. While civil society members were not included in the partnership, conclusion of the results shows that it could have been useful as support for both the public and the private partners.

Limits to the research

If this research has been useful to get a better view on how *consensus* PPPs can be used in a sustainable development context, the scope of the research did not make it possible to assess if contract PPPs can be used or not in the context of sustainable development.

In this research, it was not possible either to verify if, by including the citizens' participation in *Göteborg 21*, it would have had changed the priorities of the action plan and the City's will to realize those projects.

Studying Biogas Väst made it possible to realize that sharing a name and core values (AB Volvo and Volvo Car Corporation) is not without its challenges. It is a complex issue that could not been more explored because of the academic limits of a Master Degree Thesis.

As said previously, in 1999, AB Volvo has sold its car division to Ford Motor Company and now shares its name and core values with the American car manufacturer but business and marketing strategies are not always similar. Ford decision to get out of the Biogas Väst partnership might have sent a mixed message in regards to Volvo's core values: safety, environment, quality. Those core values belong to Volvo AB and Volvo Car Corporation but are not necessarily shared by the other Ford brands. As seen with Biogas Väst, even other core values than environment such as safety can be a challenge for Ford, as discussed in Jayne O'Donnell' article on safety problems with the Ford Explorer:

Plaintiffs' lawyers suing Ford because of deaths and injuries in crashes often unfavourably compare the safety of Ford's non-Volvo brands to Volvo. The lawyers say that if tests and designs are good enough for Volvos, they should also be used on all Ford vehicles.³⁷

Finally, since the focus was on the partnership between the City and its large industry, the impact of national support (subsidies and legislation) was studied but could not be researched thoroughly even if it probably had a large impact on the Biogas Väst project.

Follow-up to the research

Both the subject and the study case are so rich that it asks for further research in many different fields: for example, if numerous researchers from Québec and elsewhere have analyzed *contract* PPPs in transport and infrastructures, those emerging from Sweden should also be analyzed. In a model of society where public administration is very important, one can imagine that *contract* PPP will be modified in order to be adapted to answer the needs of a welfare society.

Québec would also profit from adapting *consensus* PPPs such as Biogas Väst since they can constitute sustainable business models between public and private partners. Adaptation will be needed to use such PPPs in Québec since the local reality and type of partners are different. For example, social economy businesses, which are a successful and common business model in Québec, might be a substitute to the Swedish city companies or the private sector and can become strategic partners in such *consensus* PPP. Biogas Väst can also be seen as an

³⁷ http://www.usatoday.com/money/autos/2006-01-16-ford-volvo-usat_x.htm

interesting solution for other urban projects, whether in Sweden, Québec or elsewhere when private investment is needed. By including civil society in the process to insure that they are sustainable, those PPPs can reinforce the public role of the cities in order for them to fill out their mandates in a more democratic way. Thus, the large industry will also be able to play a role in supporting the cities' welfare, a role that goes way over the actions usually found in corporate sustainability reports.

The research was also useful to realize that studying other *consensus* PPPs between the cities and their large industries in a context of globalization could deepen the academic knowledge in studying the factors of success in public-private positioning at the world level. The problems faced by large post-industrial cities such as Göteborg need further studies. While capitals usually have major governmental infrastructures, royal palaces and highly valuable heritage architecture, cities with a second-city status seem to be at disadvantage at first. But some of them have been able to develop branding strategies based on other assets: industrial heritage, colourful ambiance of a worker's town, diversified culture, etc. It is thus of interest to do further analysis of those strategies and their impact on the positioning at the international level while also studying the competition between those cities and their capitals, a subject that does not seem to have been thoroughly explored yet.

Finally, it would be of interest to study during many years a *consensus* PPP such as Biogas Väst, especially since the project is based on a subject that is very up-to-date: the technical and organizational innovations in new markets of environmental solutions is a complex and fascinating field of research. At the same time, it would without any doubt be strategic, both for public and private partners, to support interdisciplinary research in these fields also. In sustainable development, it becomes obvious that both principles and solutions depend on a multiplicity of partners. While economic development used to be fairly simple relationships between cities and their industry, or between the industries and their clients, things have changed: more and more, resolving challenges in the XXI^e century is based on the acceptance and the inclusion of many stakeholders from a wide range of partners. That is how it might be possible to realize this paradigm change as referred by in the 1987 Brundtland, which has been widely used to help governments and businesses to understand the

importance of changing their way of doing things in favour of sustainable development.

APPENDIX A

THE INTERVIEW GUIDE

Question 1: Just as a background question, I would like to know a bit more about your previous experiences, your work right now and a brief description of your enterprise (or NGO, city, bureau, etc.)...

Question 2: How would you describe the Biogas Väst project? What triggered it?

Question 3: How does the project work?

Question 4: Could a project such as Biogas Väst have been done elsewhere than in Göteborg? Would it have been the same?

Question 5: The project officially ended in 2003 (phase II). What happened since then?

Question 6: How would you rate Biogas Väst? If it was to be done again, would you change anything?

Question 7: Was there any interest in publicizing the project? To who?

Question 8: What was the impact of Biogas Väst on Göteborg and Volvo? (Former version of question 8 was: "What was the impact of Biogas Väst on your enterprise - or NGO, city, etc.- and on Göteborg?")

Question 9: How would you define "private-public partnership or PPP?" Does it apply to Biogas Väst?

Question 10: How would you define "sustainable development?" Does it apply to Biogas Väst?

APPENDIX B

THE INTERVIEW LISTS FROM THE 3 RESEARCHES ON BIOGAS VÄST

Legend:

KC: Kim Cornelissen (2007)

BTJ: Bäck, Tedros and Johansson (2003)

AA : Ahlbäck (2003)

PERSON	WOMAN/ MAN	BUSINESS/ORGANIZATION	KC	BTJ	AA
PRIVATE SECTOR					
Gunnar Ingelman	M	FordonsGas	X	X	
Bo Ramberg	M				X
Rolf Willkrans	M	Le groupe Volvo	X		
Niklas Gustavsson	M	Volvo Car Corporation	X		
Stephen Wallman	M			X	
PUBLIC SECTOR (MUNICIPAL, REGIONAL AND NATIONAL LEVELS, CITY COMPANIES)					
Bengt Blad	M	Swedish Energy Association			X
Bernt Svensén	M	Business Region Göteborg	X	X	X
Göran Värmbý	M		X	X	X
Torsten Jansson	M	Bystaden AB			X
Göran Johansson	M	Göteborg Town Council (2) Kia Andreasson's assistant (1)	X	X	
Kia Andreasson	W		X	X	
Ronnie Ljungh	M		X		
Jörn Engström	M	Göteborg (public transport)	X		
Bernt Nielsen	M		X		
Carina Bergsten	W	Göteborg Energi	X		
Anders Larsson	M				X
Lennart Ekefjord	M	Gryaab			X
Kristina Johäng	W	Västra Götaland Region	X		
CIVIL SOCIETY (AGRICULTURE, ONG, MEDIA, UNIVERSITY)					

Jakob Lagercrantz	M	Gröna Bilister	X		
Peter Lenken	M	Göteborgs Posten	X		
Jan Gustavsson	M	Hur 20/50	X		
Lars-G. Johansson	M	LRF	X		
Mats-Ola Larsson	M	Miljöfordon			X
Merritt Polk	W	Göteborg University	X		

APPENDIX C

TWO INTERNATIONAL TV REPORTS ON BIOGAS VÄST

CNN Transcript non dated

Chris Leary, Techlive Center

David Stevenson, Newsroom

(Chris) - Hard-core recyclers are getting used to get cash for trash but our David Stevenson swung to a Swedish city that's turning trash into fuel and fertilizer.

(David) - It's called the Spirit of Gothenburg. Clean streets, sparkling harbours. But it wasn't always this way. (Göran Värmbly): "*People thought of Göteborg as the Los Angeles of Sweden.*" In fact, the air quality here was so bad fifteen years ago, Göteborg was known as the place you go before you go to hell. Since then, a number of public and private agencies have taken unusual steps to clean this place up. The problem was Gothenburg's history as an industrial port city: (Göran Värmbly): "*Three refineries, two car factories, and a lot of other industry*".

So, 11 years ago, Gothenburg's official launched a revolutionary recycling program. It starts with Gothenburg's residence. Trash is separated into inorganic material to be incinerated later for heating or electricity and green organic bags to be shredded and fermented. (Ronald Svensson, Trollhättan): "We put this with water and we make a sludge of it and put it into these digesters." The in-results: tons of fresh fertilizer and biogas. (Ronald Svensson, Trollhättan): "Biogas is methane, about 65 % methane and 35 % carbon dioxide." This plant purifies the gas with a water filtering process, leaving 98 % methane. Suitable for use with these specially-equipped Volvo station-wagon also made in Gothenburg. (Staffan Johannesson, alternative fuels, VCC): "The driving experience is the same when you drive on methane gas car as you do when you drive on petrol." It's also 2/3 cheaper than

gasoline here in Sweden, and far less polluting. The in-results for the city of 475 000 Swedes: a 90 % recycling rate, cheaper fuel and cleaner air. (Göran Värmby): “Now you can really notice the difference, compared with before. Now, I think Göteborg has a very good reputation.” So far, there are over 4200 biogas powered-Car, busses and garbage trucks on the roads in Gothenburg. This recycling program aims to comply with European Union regulations that specify no organic material should be in landfills by 2005. Now by 2020, 20 % of Swedish fuel is supposed to come from alternative sources, Chris.

(Chris) – David, how expensive is this biogas recycling program is gonna be for Swedish citizens?

(David) – Well, it doesn't come cheap. For example, each recycling plant cost the city 10 millions \$ and those bi-fuel powered Volvos cost buyers and additional 5 000 box. Now, Gothenburg is offering consumers tax incentives and free parking to get them to buy them.

BBC Transcript non dated

Gothenburg, located on the West Coast of Sweden, with a population of just over 480 000, has become something of the “City of the Future” when it comes to the use of biogas for vehicle fuel. Today, some 3 000 methane-powered vehicles travel the roads of the city. Every month, this gas replaces a million litres of petrol and diesel. Something that has radically reduced air pollution. In addition, the gas-powered vehicles contribute to a considerable reduction in the emission of greenhouse gases. Every month, emissions of carbon dioxide have been reduced by some 1 200 tons. (Peter Boisen, ENGVA) *“I hope that these ideas that we have develop will spread across the world, that we will build a network of cities cooperating, spreading the good news, creating support in general for the use of biogas or biomethane in vehicles.”*

Gothenburg today is the best city in the world at using biogas-powered vehicles. One of the secrets as to why they have succeeded in Gothenburg is the fact that the City of Gothenburg and car manufacturer Volvo have worked in close collaboration

to ensure that there are advantages as using biogas. Amongst other things, biogas-powered cars do not have to pay parking fees. They also have been extremely careful to insure that there are a wealth of fuel stations too. (Göran Värmbly, Business Region Göteborg) *“Yes, we have about 20 stations here, and that’s very important because then people can reach the stations, very good.”* (Niklas Gustavsson, Volvo Car Corporation): *“One of the big challenges for the car industry is the CO2 reduction that we are heading for. And one major opportunity in this challenge is to find alternative fuels from petrol and diesel. But, in this challenge, we need friends out there. We need partners in order to build up the infrastructure and to build up the incentives necessary for customers to choose these vehicles and we, as a car manufacturer, need to supply the different vehicles.”*

All the biogas that is used is produced locally. (Ronald Svensson, City of Trollhättan): *“We take care of organic waste from households, from food industry and sludge from sewage plants. And we take care of this and make biogas of it. And we use this biogas for our city busses, for garbage-collecting car, and other car, other vehicles in the city.”* The price of a new biogas-powered car today is somewhat higher than a normal petrol-driven car. On the other hand, with a 30 % lower price for the gas, compared to petrol in Sweden, and parking benefits, this is more than compensated for. The Gothenburg project has proven to be so successful that the ideas and the methods used are to be exported to other countries. And the interest is enormous. (Niklas Gustavsson): *“There is a lot of interests for all over the world, really. We had visits from California, from Canada, from China, and from several parts of Europe as well. We hope that we can show the world that this is really doable, I mean you can do this, today already. The technology is here today, the alternative fuel is here today!”*

APPENDIX D

THREE ARTICLES ON BIOGAS VÄST PUBLISHED AFTER THE RESEARCH PERIOD

Volvo to withdraw Bi-Fuel Models?

Heads are scratching in Europe over the apparent decision by the Volvo Car Company to discontinue their bi-fuel compressed natural gas (CNG) models from late next year. Though the company does not appear to be making public statements on the matter, it is believed they have advised dealerships in Sweden that they will not be supplying their popular V70 and S60 models beyond 2007. The move comes despite a reported three-fold increase in sales of the models for the year to date this year over last year in Sweden alone.

Peter Boisen, Chairman of the European Natural Gas Vehicles Association (ENGVA) and retired Volvo executive responsible for introducing the current generation of Volvo bi-fuel cars, expressed his disappointment at the decision saying that prospective buyers of the vehicles would now likely switch to other CNG powered models rather than opting for an alternative Volvo model.

Boisen says the decision is also a major blow for other stakeholders in Sweden and other parts of Europe who have relied on the availability of the Volvo bi-fuel models for their programs. "A large number of Swedish actors have responded to demands from the car industry, and Volvo in particular, and have made very large investments both into public refuelling sites able to service a rapidly growing fleet of NGVs, and into local municipal production of biomethane for use in all types of vehicles, but where the bulk of the demand eventually would come from the passenger cars. A

significant number of already built public Swedish gas refuelling stations are actually located adjacent to Volvo dealerships.”

“Already today more than 50 % of all methane used as a vehicle fuel in Sweden consists of biomethane. Total biomethane investments so far are in the order of 2-3 billion Swedish crowns or some 2-300 million Euros. The profitability of these investments now risks being substantially eroded, at least in the short term, as a consequence of the Volvo decision.”

The door appears to remain open for Volvo to either reverse its decision will continue production of the bi-fuel models at a later date, with the company reportedly pledging to “continue to support development work”.

Source: <http://www.ngvglobal.com/> Stockholm, November 1st 2006

Swedish Municipalities Protest Volvo Bi-Fuel Withdrawal

Seventeen municipal governments in Sweden have joined forces to lobby the new Swedish Government, calling for support of biomethane projects and protesting the recent decision by Volvo Car Corporation to cease production of their bi-fuel CNG gasoline vehicles late next year. Swedish based Chairman of the European Natural Gas Vehicles Association and former Volvo executive, Peter Boisen, says that were it not for the pressures of time, more municipalities would have probably joined the protest.

Boisen says the municipalities are obviously looking for the government to put pressure on Volvo to reconsider the decision, expressing surprise that they did not use the opportunity to announce a new procurement policy barring all Volvo and Ford cars from their purchasing lists in a period when Ford/Volvo no longer offers NGVs. “Ford owned Volvo Car Corporation has for years pushed the Swedish government to support heavy investments in biomethane production and distribution facilities, and thus has a moral responsibility to continue to provide vehicles using this fuel option,” said Boisen.

While Volvo is reported to have told visitors to a recent “Biogas Highways” seminar in Sweden last week that sales of 5,000 units per annum were required to justify

continued production, Boisen says claims do not stand scrutiny. Alternative fuelled vehicle sales continue to grow in Sweden, with natural gas vehicles forming a major share of sales. "Not less than 6 % of all Volvo cars sold in Sweden January-October 2006 were bi-fuel CNG cars," said Boisen. "In October alone the bi-fuel share was above 7 % and steadily growing. A reasonable expectation for the year 2007 would be a share above 10 %, or sales at an annual rate of 5000 units."

Boisen says that as sales in Sweden alone would likely reach the reported production requirement; other unstated reasons are the likely cause for the proposed halt to production, saying "It seems fairly obvious that insufficient volumes are not the true reason for the cancelled offer. A more likely explanation is that Ford has been scared by the sales success for the Volvo bi-fuel cars, and pulled the brakes to stop these vehicles becoming a real threat to the standard offer of cars powered by gasoline, or similar cars with a capability to drive on high ethanol blends - the renewable option favoured by major American oil companies and the American car industry (which in essence preserves the status quo)."

Despite the apparent reluctance of Ford/Volvo to continue with production of the bi-fuel models Boisen remains optimistic that the public reaction to the proposed withdrawal, along with statements of support such as those expressed by the municipalities, will lead Ford/Volvo to reverse the decision before it is enacted late next year.

Sources : <http://www.ngvglobal.com/> 24 novembre 2006, Malmö, Suède.

Volvo ought to continue to produce gas cars.

This is in response to the article published in the October 14 DI edition on Volvo's decision to stop the production of bi-fuel cars.

Håkan Matson writes in the October 5 edition that it "was both a logical and sound business and environment decision" that Volvo should stop the production of biogas cars. We don't share this view. Biogas (methane –composed mainly carbon and hydrogen) is today's **best environmental** fuel. Not only is it renewable but it also

reduces carbon emissions – by transforming dumps of mud, manure, etc. into biogas, thus stopping methane from leaking (methane is also a powerful greenhouse gas) and reducing the use of petrol and diesel also. Methane – which can be both natural gas (fossil) or biogas (renewable gas) is the fuel which has **the lowest negative impact on health and environment**. The production and use of biogas from different sources of organic waste contributes to a long-term sustainable waste system. At the same time *artificial fertilizers (that uses limited energy resources) can be replaced by* nutritional organic fertilizers, obtained as a by-product in the biogas production.

Gas vehicles bring a positive contribution to Volvo's own company values.

Sales have reached 3 000 gas cars per year (c.a. 6 % of all new Volvo cars), which means dealer's revenues of about one billion SEK. In 2007, sales are estimated at about 5 000 cars.

AB Volvo maintains its own investment in gas vehicles. Volvo Car's decision is surprising when one learns that the EU has decided that 18 % of all petrol and diesel vehicles shall be replaced with natural gas or biofuel by 2020. **There have never been as many sales of gas cars as now.** You can find about 400 000 gas vehicles in Italy, 600 000 in Europe and 5 million cars in the World.

The number of gas stations in Sweden has increased by 20-25 % yearly and should reach 200 in a couple of years. Germany has 640 gas stations and should have built 1000 by year 2008. On top of that, Germany and Austria recently agreed that the natural gas network should have a certain amount of biogas accessible as vehicle gas.

It is true that there are five times more ethanol cars than gas cars in Sweden today – but how many of these really run on ethanol? **For the first half part of the year, biogas/natural gas sales were 22 % more than ethanol** for individual cars and busses (calculated in energy equivalence). That means that gas cars are filled up with gas way more than E85 cars are filled up with ethanol.

This pamphlet has been written by Anders Nylander and Franziska Larsson from Biogas Syd, Göran Värmby and Bernt Svensén from Biogas Väst, and Stig Holm from Tekniska Verken.

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APPENDIX E

VÄGVERKET'S CRITERIA DEFINING *ECO CARS*

Eco cars (*Miljöbilar*)

The term eco cars is used in various contexts in society. Although there still isn't any generally accepted definition of the term, it is intended to describe vehicles that have low levels of emission of harmful substances and of climate gases. Future definitions might further require low noise levels. This page attempts to describe the most essential regulations and benefits related to the concept of "eco cars".

Many different definitions

More and more eco cars are being sold in Sweden: cars using alternative fuels, flexifuel and hybrid-electric vehicles but also very fuel-efficient "normal" petrol and diesel cars. In general, a eco car should have low emissions of fossil carbon dioxide (a major greenhouse gas), low emission-levels of other harmful substances and low noise levels. A commonly accepted technical definition of the term eco car is however still lacking. Currently, several overlapping definitions that differ slightly are used. Subsidies and other incentives to stimulate eco cars can therefore vary in different situations and cities. Efforts are being made to use one common definition and common criteria for eco cars for all subsidies and benefits throughout Sweden.

Eco car subsidy

Private individuals who buy an eco car that fulfills the criteria below are eligible for a "eco car" subsidy of SEK 10 000.

Criteria for an eco car subsidy

According to the national Ordinance on a eco car subsidy “, eco cars must have low carbon dioxide emissions, be energy efficient and have low emissions of harmful particulate matter. Fuel consumption must be low regardless of whether the vehicle is run on alternative or fossil fuels. In future definitions, even low noise levels will be demanded.

To be eligible to the state subsidy for eco cars, following criteria must be fulfilled:

An alternative fuel vehicle (flexible fuel, bifuel and/or electric) shall have a fuel consumption below the energy equivalent of

- *9.2 litres of petrol*
- *9.7 cubic metres of natural gas (CNG) or*
- *37 kilowatt hours electric energy per 100 km.*

An alternative fuel vehicle shall also run predominantly on alternative fuels as opposed to fossil fuels.

A vehicle run on fossil fuels can be called a eco car if the carbon dioxide emissions are below 120 grams/km. In order to meet this requirement the fuel consumption must be below 4.5 litres diesel or 5.0 litres petrol per 100 km. (Note that this is due to the requirement concerning carbon dioxide).

For vehicles with diesel engines, emissions of particulate matter must be below 5 mg/km. In practice this means that vehicles run on diesel must be equipped with a particulate filter to be classified as a eco car.

Eco cars: congestion tax and other benefits

Certain eco cars can be exempted from the congestion tax as well as have a lower taxable benefit value. But these benefits do not cover all the eco cars eligible for the eco car subsidy. One of the determining factors is the engine technology used. Public procurements and leasing

Both fuel efficient as well as flexible fuel vehicles can be considered eco cars when publicly procured or leased by public authorities, provided that they meet the fuel consumption criteria and that a call-off under the government framework agreement is possible. If your tasks at a public authority involve clean vehicles, click on the following link for further information.

Lists of eco cars

Although the Swedish Road Administration does not have any lists of eco cars, there are a few other websites that publish relatively up-to-date information about those available on the market.

Miljofordon.se - is a website presenting vehicles that meet the eco car requirements that apply in the cities of Stockholm, Gothenburg and Malmö along with definitions

that apply at the national level. It provides a clear overview of all recently manufactured light vehicles on the market that fill any of these definitions.

Avropa.nu (call-off) – The National Police Board has a list of clean vehicles that are included in the current procurement agreement for public authorities. The vehicles on the list satisfy a number of the general requirements (including some road safety and environmental requirements) as well as the provisions in the ordinance concerning the purchase and leasing of clean vehicles by public authorities. This list is published as an excel document at avropa.nu (in Swedish only).

Eco cars and environmental classes

Although eco cars and environmental classes are two different concepts, they are often mixed up. In simple terms, environmental classes describe the levels of a car's emissions that directly affect human health and the environment. Examples are the emission levels of carbon monoxide, hydrocarbons, nitric oxides and particulates. In Sweden, all cars and light lorry models from 1993 onwards are assigned to an environmental class.

The eco car concept adds the climate perspective: Besides low emission-levels of directly harmful substances, an eco car even has low emission levels of carbon dioxide, a major greenhouse gas.

Source : http://www.vv.se/templates/page3_21943.aspx#Lists%20of%20eco%20cars VE

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