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VOLUNTARY CARBON OFFSETTING BY LOCAL AUTHORITIES: PRACTICES AND LESSONS

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Local authorities (regions, departments, metropolitan areas and towns) are increasingly involved in defining and implementing policies to combat climate change. This is not a simple task, as beyond emissions generated by their administrative services, most greenhouse gas (GHG) emissions in their territorial jurisdiction are beyond their direct control. Often given responsibility for the emissions of all actors within their administrative boundaries, different local authorities are often restricted in their ability to foster reductions through their attributed jurisdictional competencies.

Faced with such limitations in fostering reductions, voluntary offsetting is one of the tools available to local authorities for reducing territorial emissions, by either purchasing carbon credits in order to offset emissions or by selling generating credits in order to create a source of financial income. Although the voluntary offset market is still small in comparison with the compliance market created by the Kyoto Protocol, market participants find it to be a more flexible, innovative and responsive framework. In exchange, average prices, which are determined on an over-the-counter basis, are usually lower than those for compliance credits. At the same time, the compliance and voluntary markets reveal very significant differences linked to the nature of the project.

This Climate Report presents ten case studies in order to better understand how and why local authorities use this instrument. Analysing the offer, local authorities that sell carbon credits account for a very small percentage – just 3% – of voluntary offset projects. Their typical profile is that of a US local authority, which is implementing a methane elimination project at its waste disposal site, primarily in order to anticipate future regulation and to obtain a source of additional financing.

Local authorities' share of the demand for voluntary credits is harder to quantify. The case studies nonetheless shed some light on the determining factor for a successful offset programme: namely a carefully designed project rooted in the local authority specific context and is shared by local players. In fact, the vast majority of local authorities prefer to buy carbon credits generated by projects implemented within their jurisdiction, in order to maximise other economic, social and environmental benefits than the simple reduction of GHG emissions. The choice of the financing vehicle (dedicated framework, tender or tax) depends on the size of the offset programme and on the type of projects targeted. It has no determining impact on the success and sustainability of the offset programme.

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INTRODUCTION

Where reducing the emissions generated by projects is concerned, two types of market co-exist: (i) the compliance markets, which are regulated and managed by public authorities, and (ii) the voluntary markets, which enable participants to achieve or invest in emission reductions, even though they are not subject to any legal constraints.

The report on towns' access to the compliance market prepared by the OECD and CDC Climat highlighted the difficulties and the key success factors for projects implemented in the context of the Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation (JI) processes (Clapp *et al*., 2010). However, the involvement of local authorities' (regions, departments, metropolitan areas and towns) in the voluntary market has still not been addressed.

The aim of this Climate Report is to understand why and how local authorities use the voluntary carbon offset market. To do so, this study presents ten case studies (Figure 1).

Figure 1 – Location of the 10 local authorities that we studied

Source: CDC Climat using Google Earth.

The first part of this report describes the principle of carbon offsetting and the growing momentum of the voluntary market. The second part examines the role of local authorities in supplying voluntary offsetting options. The third part presents cases where the local authority is the source of demand for voluntary offsetting, as well as the keys to a successful and sustainable offset programme. Lastly, section four examines the role played by the financing framework in detail – direct purchase and/or sale, or dedicated framework for the financing vehicle; tax, internal budget or private capital as a source of financing – in local authorities' offset programmes. The method followed for the quantitative analyses and the case studies is described in the Appendix.

I. FROM THE IDEA OF OFFSETTING TO THE VOLUNTARY ORGANISED MARKET

A. A solution that rounds out an emission reduction policy that is inevitably incomplete

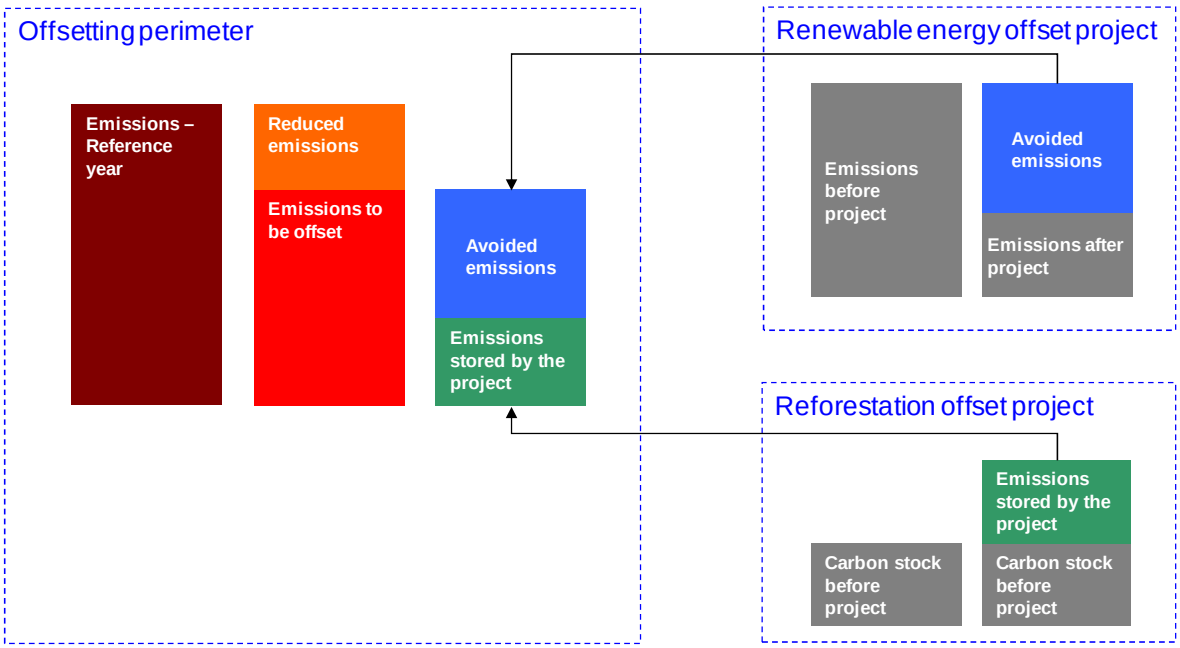
As part of the combat against climate change, any player who wants to be involved first assesses their emissions, usually on an annual basis, and then sets economically feasible and politically acceptable emission reduction targets. However, GHG mitigation policy typically has limits: i) a portion of the emissions cannot be eliminated unless the source ceases; ii) the technological costs may be prohibitive beyond a certain reduction level; and iii) changing or reorganising some activities may be both difficult and time consuming.

The offsetting principle enables a complementary policy to be implemented

Buying carbon credits, i.e. financing a project that avoids GHG emissions, may provide one solution for overcoming these obstacles and meeting the desired emission reduction targets. In this way, the reduction in the seller's emissions offsets those that the purchaser was unable to avoid. Buyers can offset all or part of the emissions that they cannot reduce, depending on their requirements.

This principle is illustrated in Figure 2. In this example, a local authority that had assessed its emissions over a year (red rectangle) establishes a GHG emission neutrality target. To achieve this objective, the authority offsets the portion of emissions that it could not reduce (dark orange rectangle). This offset was achieved by buying an equivalent volume of credits from other emission reduction projects. As such, emission reductions that could not occur locally are financed off-site at a lower cost, equally creating a financial flow for these off-site projects that could or would not have occurred otherwise.

Figure 2 – Total emission offset principle



Source: CDC Climat Research.

Features specific to local authorities

The emissions generated in one area do not just amount to the emissions generated by the local authority's services. In fact, many players (companies and individuals) operating in the local authority's area generate emissions.

A local authority that wants to reduce its emissions can take rapid action where the emissions of services under its direct control are concerned. In the longer term, and to the extent that its institutional prerogatives allow it to do so, it may also encourage players in its area to reduce their emissions through regulatory measures and/or through the implementation of incentive-based public policies. Voluntary offsetting is one of the incentive-based tools available to the authority to achieve mitigation objectives.

B. From a private initiative to an organised sector

The US pioneer

In 1989, eight years before the signing of the Kyoto Protocol, a private company launched the first carbon offset programme. AES, a US electricity generator, decided to provide US$2 million to finance an agro-forestry project in Guatemala. The idea was that that the 50 million trees planted would capture as much CO_2 in the atmosphere as the annual amount of CO_2 emitted by its new high-emission power plant in the State of Connecticut. Initially, the offset was on a voluntary basis. It was only when the two Kyoto Protocol offset mechanisms – the Clean Development Mechanism (CDM) and Joint Implementation (JI) – became operational in 2001, and the European Union CO_2 allowance exchange (EU ETS) entered into force in 2005, that “compliance” offsetting overtook voluntary offsetting.

Offset providers gain momentum

In 1991, Primaklima, a German organisation, offered the first offset service for companies. In 1997, the year the Kyoto Protocol was signed, two British companies (The Carbon Neutral Company and Climate Care), and one US and one Australian organisation (National Carbon Offset Coalition and Greenfleet) entered this niche market themselves. These five “offset providers” were then joined by three or four new entrants per year up until 2006, when major banking groups like JP Morgan entered the voluntary market. These groups contributed to the market’s consolidation by buying up existing providers or by creating in-house offset services.

In 1989, AES had to implement the forestry project and measure the emissions itself. Nowadays, it could call upon a variety of specialized service providers.

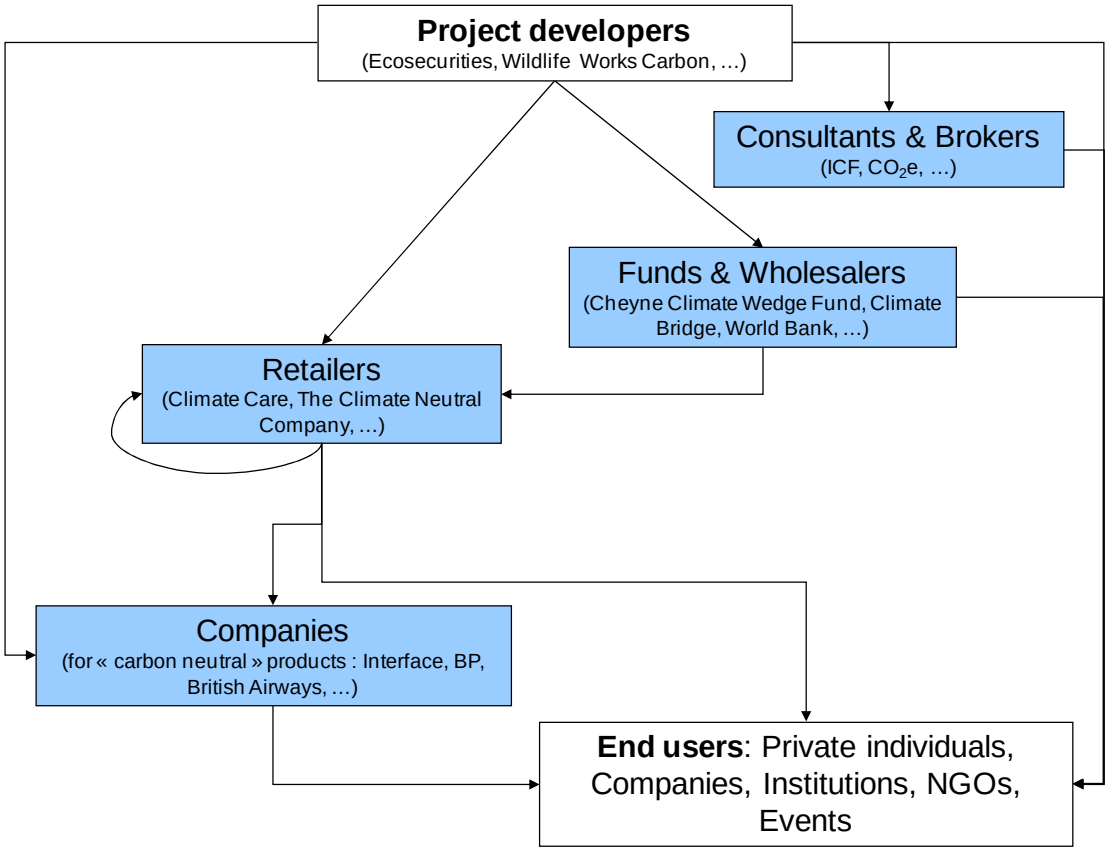
The players in the voluntary carbon offset sector

As shown in Figure 3, several players may be involved and play a specific role in the voluntary carbon offset sector:

- *Project backers* take responsibility for implementing and managing the reduction project. They are the primary vendors. They may sell their credits to an end-customer or an intermediary (in blue). Usually, direct transactions between a project backer and the end-customer are restricted to large customers, following a tender process drawn up with the backing of consultants and brokers.
- *Intermediaries* who have the capital resources to enable them to manage over a million credits are included in the “Funds and Wholesalers” category. Their customers are major offset end-customers or specialist providers. As a result, the World Bank is able to intervene in the voluntary offset sector.
- *Retailers* provide voluntary carbon offsets on a retail basis, in amounts varying between several hundred thousand tons, sold to large businesses , and down to a few tons, which a private individual buys to offset vacation travel. In some cases, they may come to develop projects that are customized for clients who are ready to provide the necessary initial financing.
- Companies may be both end-customers for, and sellers of, “carbon-neutral” products to other companies or individuals.
- Lastly, the “End-Customer" category includes buyers who use the credits to offset their emissions or those of the “carbon-neutral” product. They cancel or “retire” the credits, as a proof of use and a

guarantee that they will not resell them. In terms of volume of credits retired, businesses dwarf the other types of "

Figure 3 – The voluntary carbon offset sector



Source: CDC Climat Research.

C. The voluntary market in figures

The demand for voluntary offsetting is the result of four main factors (Bellassen & Leguet, 2008): i) the desire to take action for the environment right now; ii) the desire to communicate about climate change; iii) the opportunity to create value-added; and iv) the need to become familiar with the carbon markets. The below section looks at how the sector has been able to incorporate these requirements.

Standards to guarantee the quality of credits

The involvement of conventional banking intermediaries from 2006 onwards has made access to voluntary offsetting easier. It has also accelerated the development of quality standards, which guarantee compliance with environmental, and often social specifications, and hence the reliability of the offset initiative. Auditors are responsible for checking that the project complies with the certification requirements.

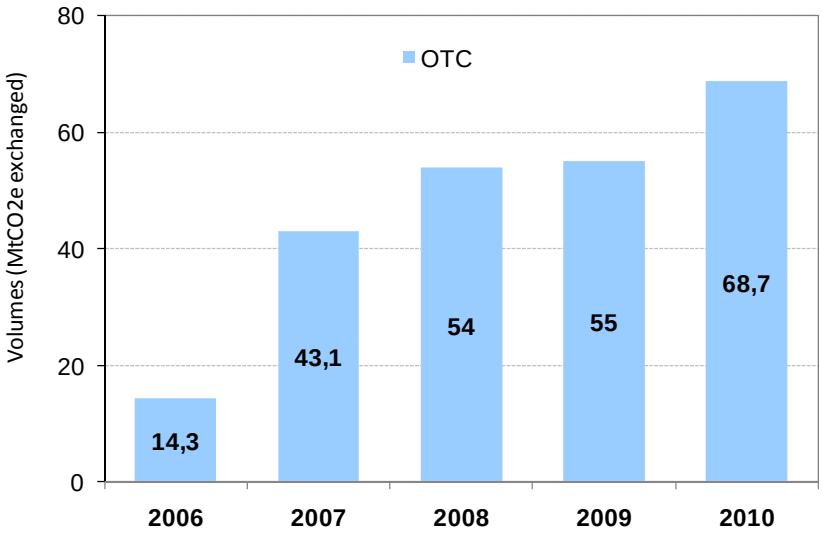
Most standards focus on the specific features of reduction projects and on recording the reductions obtained. The best-known standard is the Clean Development Mechanism (CDM), which was designed for compliance offsets. However, due to its often data-intensive and complex methodological demands, this standard is not widely used in the voluntary market, where several standards coexist. These standards, which are heavily influenced by the CDM, each display innovative features, which are often aimed at including new sectors, limiting the extent and cost of the certification process, or quantifying the ancillary social and environmental benefits. The Verified Carbon Standard (VCS) is the most widely used voluntary standard. It certifies 40% of the voluntary market's carbon credits.

Volume: a significant increase

The regulatory market is over 50 times larger than the voluntary market, with €14.9 billion and €320 million traded respectively in 2010. Credits are also more expensive on the regulatory market, where they cost €12.50 per tCO_2e on average, compared with €5 tCO_2e on the voluntary (BlueNext; Peters-Stanley *et al*., 2011).

The voluntary market remains attractive, as shown by the increase in trading volumes since 2006 and as illustrated in Figure 4. After stabilising in 2009, volumes increased in 2010, following the return of buyers who had remained on the sidelines during the economic crisis, as well as due to the growth of forestry projects.

Figure 4 – Credits traded over-the-counter on the voluntary markets



Note 1: over-the-counter trades do not include transactions on the Chicago Climate Exchange (CCX). Note 2: the 2010 figure does not include an exceptional 50 $MtCO_2e$ transaction linked to the closure of the CCX.

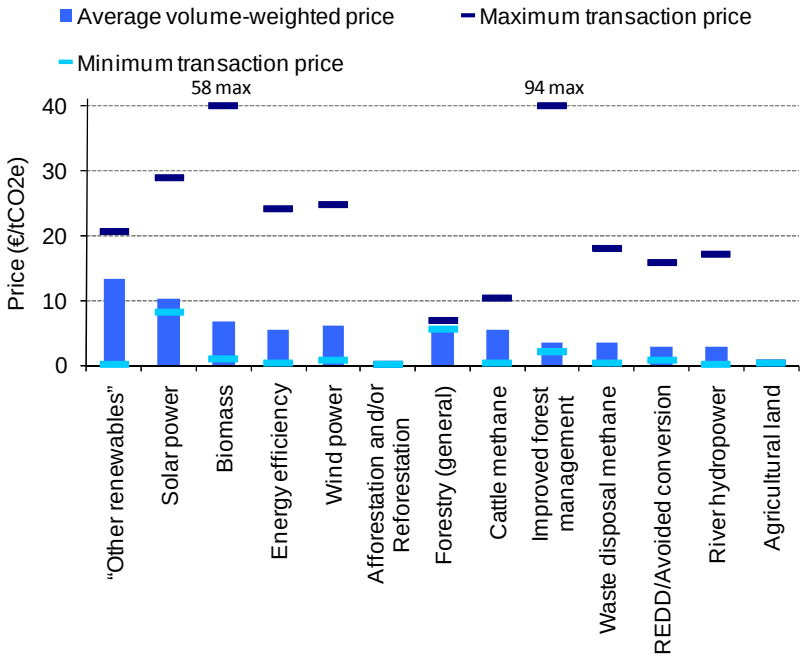
Source: CDC Climat Research, based on data from Peters-Stanley et al., 2011.

Prices: significant disparities

The price of voluntary credits varies significantly not only between project types, but also within the same category of projects, as shown in Figure 5.

Unlike compliance credits, voluntary credits are not a standardised commodity: prices are negotiated on an over-the-counter basis and primarily depend on each project's specific features. For example, the credit price for a solar energy development project may range between €9 and €34, while comparatively it may range between €0.80 and €19 for a project to reduce gas emissions from waste. The small role played by exchanges also results in a lack of clarity where prices are concerned, which leaves ample room for negotiations between buyers and sellers.

Figure 5 – Minimum, average and maximum 2010 credit prices for a selection of project types



Note: Estimates based on 461 observations.

Source: CDC Climat Research, based on data from Peters-Stanley et al., 2011.

Location: the main host countries are those with no emissions reduction obligations

In 2010, most projects on the voluntary market were implemented in the United States (35%) and in Latin America (28%). Only 1% of voluntary projects are located in the European Union, due primarily to the existing regulatory framework for emission reductions, which provides a higher price for carbon credits and has introduced tighter regulations on offset projects.

In contrast, the demand for voluntary offsetting is balanced, with 41% of that demand in Europe and 37% in the United States.

II. LOCAL AUTHORITIES' LOW PARTICIPATION IN THE SUPPLY OF VOLUNTARY OFFSETS

A. Only 3% of carbon credit sellers on the voluntary market are local authorities.

The Verified Carbon Standard (VCS), Climate Action Reserve (CAR), Chicago Climate Exchange (CCX)[4] and Voluntary Gold Standard (VGS) project standards certified 75% of the units traded on the voluntary market in 2010[5]. An analysis of their databases (see Appendix I for a description of the methodology) has enabled the identification of projects within which local authorities are heavily involved (see Table 1).

In fact, 818 projects that had generated carbon credits were registered at the end of 2010. Only 21 of them, or 3%, saw a local authority play an active role, i.e. as a project backer or as a player with a genuine decision-making power over the reduction project. In both these cases, the local authority was a driving force in generating and selling the voluntary credits obtained.

[4] Although the CCX carbon exchange stopped operating in 2011, the CCX procedures for offset certification are still functioning.

[5] Source: Ecosystem Marketplace, after excluding the CCB, which is usually combined with another label.

Table 1 – Breakdown of projects by standard in 2010, and percentage of projects implemented by local authorities

Voluntary market ranking	Label	Total number of projects in 2010	Projects in which a local authority is heavily involved		
			Number	As a %	Comments
1er	Verified Carbon Standard (VCS)	382	2	1 %	Waste disposal sites in South Korea and New Zealand
2nd	Californian Action Registry (CAR)	70	8	11 %	Waste disposal sites in the US, including two in New York
3ème	Chicago Climate Exchange (CCX)	334	11	3 %	10 US waste disposal sites and one hydro-electricity project
4ème	Voluntary Gold Standard (VGS)	32	0	0 %	
Total		**818**	**21**	**3 %**	

Source: CDC Climat Research.

In fact, US local authorities account for 19 of the 21 identified projects executed. This high percentage of US sellers is explained by the fact that the United States, which did not ratify the Kyoto Protocol, cannot take part in JI or CDM projects.

The two remaining projects are a New Zealand project, which became a JI project from 2008 onwards, and a South Korean project, which became a CDM project after 2007. These projects therefore predate the JI and CDM initiatives, i.e. the project backers obtained voluntary certification, which was quicker, and then generated voluntary credits while waiting for compliance certification. Once that certification had been obtained, they switched to compliance credits, which are more profitable as they can typically be sold at a higher market price.

Only one of the 21 projects identified does not involve the waste sector, but hydro-electricity generation instead. Reducing emissions from municipal waste disposal sites, which accounts for 20 projects, seems to be local authorities' favourite mechanism, as illustrated by the representative Chautauqua case study.

B. Chautauqua: typical profile of a local authority that sells voluntary carbon credits

The Chautauqua County project in New York State generated the highest amount of credits among the projects certified by the Climate Action Reserve (CAR) and involving a , with a total of 459,916 credits, known as Climate Reserve Tonnes (CRT) between 2005 and 2010.

Table 2 – Emission reductions generated by the Chautauqua waste disposal project

	2005	2006	2007	2008	Total
Emissions forecast in the benchmark scenario (tCO_2e)	30 864	45 766	87 271	96 273	260 174
Emissions forecast in the projet (tCO_2e)	194	213	208	189	804
Emissions reductions (tCO_2e)*	30 670	45 553	87 063	96 084	259 370
*** as measured and calculated in accordance with the project methodology**					

Source: Document describing the CAR 424 project, Chautauqua County.

The waste disposal site opened in 1981. It is owned by the local authority, which manages it with the permission of the New York State Department of Environmental Conservation.

The law requires waste disposal sites to put in place a methane capture system from 2011 onwards. Before that date, any emission-reducing project was therefore considered as voluntary, and became eligible for CRT credits that could be sold on the voluntary market under the Californian CAR standard. The local authority was able to start the methane capture and burning project in 2001 and so obtain CRT credits.

In 2007, Innovative Energy Systems (IES), a private company, won the local authority's tender to manage the waste disposal site. Chautauqua County therefore retains ownership of the carbon credits, but delegates the management of the reduction project and the sale of credits to IES. The company deducts the income generated by the credit sales from the amounts it invoices to the local authority.

The forthcoming Federal regulatory constraint may have been a significant reason for launching the project, along with the option of obtaining voluntary carbon credits. The "Methane to markets partnership" run by the US Environmental Protection Agency may also have played a role in the decision.

This kind of project predominates primarily because the waste disposal sector is one where local authorities have historical capabilities, given that they usually own the waste disposal sites, and have the resources to conduct innovative experiments successfully. In addition, waste disposal sites are a significant source of methane, which has a high warming capacity, and the technology is mature and relatively inexpensive. It is therefore possible to obtain carbon credit volumes that are high enough to ensure that the project is profitable.

C. The key success factors for a project on the voluntary market

These quantitative factors and the Chautauqua case study show that the projects backed by local authorities in the voluntary market are similar to those that they back on the compliance market. The same sector, i.e. the waste sector, is the dominant one. The conditions for success are also similar to those observed in the compliance market by the OECD-CDC Climat report on urban projects (Table 3), namely a profitable project that is suited to urban authorities' needs, private sector involvement (IES), and local political backing.

Table 3 – Motives for urban projects and factors behind their success

Project Element	Conditions for Carbon Market Access & for Project Success
Project profitability and type/suitability	✓ Suitable project types for city authorities ✓ Use of existing or simple methodologies/technologies ✓ Projected profitability
Co-benefits	✓ Existence of high local co-benefits
Private sector engagement	✓ Risk management through private sector engagement e.g. for technical expertise and financial risk management
Political will and strong multi-level governance	✓ Local political support ✓ Alignment with national climate strategy ✓ Support from national or regional government for methodology and project development ✓ Engagement of international partners

Source: Clapp et al., 2011.

Local authorities therefore run a very limited range of offset projects in terms of their quantity and type. We will look at how they are positioned in terms of buying carbon credits.

III. LOCAL AUTHORITY DEMAND FOR OFFSETTING: A PUBLIC POLICY FOR FINANCING LOCAL PROJECTS

For local authorities, buying voluntary offsets takes the form of a public policy, and depends on the national and local context.

A. The context has a significant influence on the offset initiative

Case studies enable us to observe a wide range of situations in which local authorities have launched voluntary offset programmes (Table 4).

Table 4 – The institutional framework and local authority targets

Local Authority		National context	Local authority position
Eastleigh County Council (UK)		• Ratification of the Kyoto Protocol in 2002 • Involvement in the European carbon market • Creation of a voluntary offsetting fund – Government Carbon Offsetting Facility (GCOF)	• A Climate Plan was drawn up in 2003 • Target: being carbon neutral for the London Olympic Games in 2012
Perth (Australia)		• Late ratification of the Kyoto Protocol (2009)	
France	**Ile-de-France**	• Ratification of the Kyoto Protocol in 2002 • Involvement in the European carbon market	• Decentralised cooperation
	Aquitaine		• Forestry resource devastated by storms • Target: supporting the forestry sector and restoring the sector
Canada	**Toronto**	• Ratification of the Kyoto Protocol in 2002, although the country is described as non-compliant • Unfavourable to a new post-2012 commitment period • Unlikely to comply with its Kyoto undertakings	• Emissions from its own operations have been reduced by 40% since 1990 • Target: reducing the area's emissions by 6% by 2012, 30% by 2020 and by 50% by 2050, always compared with 1990
	British Columbia		• The Province's target is to reduce the area's emissions by 6% by 2012, 18% by 2016, 33% by 2020 and by 80% by 2050, always compared with 2007 • Law requiring carbon neutrality for all Government activities by 2010 • Member of the Western Climate Initiative (WCI), a regional partnership that aims to set up a market for trading emission allowances in North America
United States	**Chicago**	• Non-ratification of the Kyoto Protocol • Congress is hostile to a restrictive climate policy • North-Eastern States regulatory market (RGGI) since 2009 • Californian regulatory market since 2013	• Climate Plan drawn up in 2008 • Target: reducing the City emissions by 80% by 2050 compared with 1990
	San Francisco		• Target: reducing emissions by 20% by 2012 compared with 1990
	Chautauqua		• Target: anticipating forthcoming regulatory constraints on the waste disposal site
	Seattle		• Political will to offset a portion of emission-generating operations

Source: CDC Climat Research.

English-speaking local authorities are well represented

The examples examined below mainly involve English-speaking local authorities. The reason is mainly the absence of regulatory constraints: the United States refused to ratify the Kyoto Protocol, and Australia ratified it belatedly (in 2009); while Canada has adopted a specific position that will undoubtedly result in it breaching its Kyoto undertakings.

Eastleigh is the exception to the rule, inasmuch as the United Kingdom has ratified the Kyoto Protocol and is involved in the European carbon market. In 2007, the British Government even created a dedicated offsetting facility, the Government Carbon Offsetting Facility (GCOF), which buys credits from offset providers on behalf of public bodies, including ministries. To date, however, no local authority in the United Kingdom has used this offset mechanism, according to the Department of Energy and Climate Change, which is responsible for the GCOF. Eastleigh has chosen not to use it because the authority would rather have its own tool.

"Tailor-made" action

Where offsetting emissions is concerned, local authorities may take action (Table 5): (i) either regarding direct emissions, which are the result of their operations, and of the emissions generated by their representatives as part of their remit; or (ii) regarding indirect emissions generated by other actors present within their administrative boundary.

Once the authorities have decided which emissions they want to offset, they determine the type of projects generating the voluntary credits they want, and in particular the sector concerned (Table 5), the most common being energy efficiency, waste and forestry oriented projects.

Table 5 – Sectors covered and types of projects selected by local authorities for their voluntary carbon offset schemes

Local authority	What is offset				The type of projects selected					
	Emissions from one sector		All the authority's emissions		Forests	Local projets	Waste	Renewable energies	Energy efficiency	Apparent desire to use a label?
	Direct	Indirect	Direct	Indirect						
Eastleigh				✓		✓		✓	✓	No
Perth		✓			✓	✓		✓	✓	No
Île-de-France	✓		✓		✓				✓	VCS
Aquitaine					✓	✓				VCS
Toronto				✓		✓	✓	✓	✓	No
British Columbia	✓				✓	✓	✓	✓	✓	No
Chicago				✓	✓	✓	✓	✓		No
San Francisco	✓		✓			✓	✓	✓		No
Chautauqua	✓					✓	✓			VCS
Seattle	✓					✓	✓	✓	✓	VCS/CAR

Source: CDC Climat Research.

B. Priority is given to geographically-local projects

Almost all the local authorities identified, except Ile-de-France regional government, wished to finance projects located in their immediate geographical area or country.

Perth's aim is to achieve both global and ancillary local benefits

The example of the City of Perth, in Western Australia, illustrates this objective. The local authority has launched a number of eco-friendly initiatives since the early 2000s. When the concept of offsetting took hold, Perth wanted the project to generate marketable credits, primarily on the assumption that an emission licence market would be created in Australia.

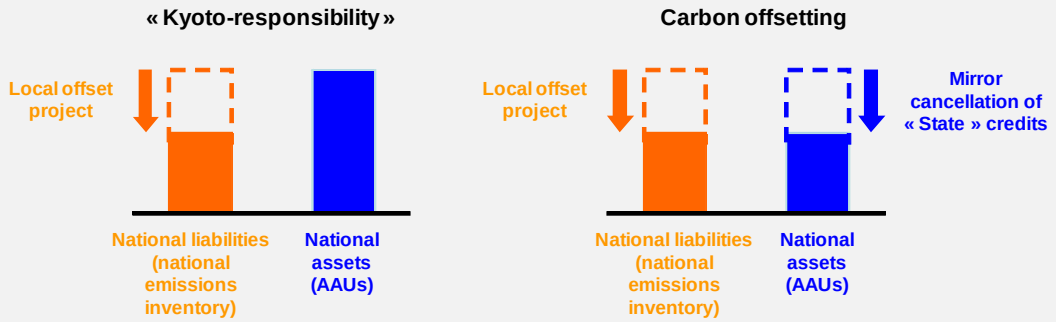
Perth wanted a geographically local emission reduction programme in order to be able to oversee it themselves and in doing so, minimise the risks in terms of quality and delivery of the credits. The local authority did not involve an accredited quality standard as Australia had not at the time fully developed suitable processes. The project involved planting trees in selected areas so as to capture carbon and improve agricultural production. The process took the form of public tenders. The first tender for the planting and maintenance of 85,000 trees was awarded to a family of farmers in 2009, and the second was awarded to Carbon Conscious, a specialized company. The company planted 85,000 eucalyptus trees in 2011 in order to capture around 15,600 tCO_2e over 40 years. The City will own the generated carbon credits linked to this initiative. The variety of Eucalyptus used is also suited to harvesting for the production of bio-fuel and will regrow from the root system.

Perth wanted to meet several requirements thanks to this initiative. First, the tree-planting project enabled it to offset emissions from journeys within and across the city. Second, the City viewed the project as a means of boosting ties between city-dwellers and farmers, as well as fostering biodiversity on depleted land.

Box 1 – Local projects and double-counting

Local projects in annex B countries raise the issue of double-counting with "Kyoto allowances". Indeed, as long as the emissions reductions linked to credits have an impact on the national inventory, the offset approach adopted by private businesses or individuals will contribute to the country's efforts to reach its Kyoto objectives. As shown below, this has more to do with "Kyoto responsibility" than with carbon offsetting, strictly speaking. The local "offsetting" project helps the country in which it takes place to reach its Kyoto target, but one can consider that it does not result in carbon offsetting *per se* as the country would – in theory – have ended up financing the emissions reductions to reach its target. The "UK Carbon Reporting Framework" and the CarbonFix standard illustrate this type of practice.

« Kyoto-responsibility » and carbon offsetting for the countries with national emissions reduction objectives



In the countries subject to a constraint on emissions, the single use of offset credits will therefore require projects that have no impact on their national inventory (such as most forestry projects), or that cancel the country's corresponding State obligation for each cancelled offset credit (this is the case of joint implementation projects). This additional difficulty explains why local authorities engaging in carbon offsetting programs are more often located in countries where the Kyoto Protocol is not or does not seem to be enforced such as the United States and Canada.

Source: CDC Climat Research.To know more,see Climate Report n°11 – The emergence of voluntary carbon offsetting.

The tree-planting project provided an opportunity for the capital City to show residents that there was concern about the environment and to encourage the development of the local economy. According to those responsible for the project, the initiative is very popular with the public; it was widely advertised to residents through newspapers and television.

Among the lessons learned from this commitment, Perth believes that this type of project needs to be launched earlier. Indeed, it needs to be explained to residents at great length, and this takes time. The local authority is planning additional tree-planting projects over the coming years and will proceed in the same manner as before. It may sell its carbon credits in the future and hopes that the experience gained from the tree-planting project will help it to seize this opportunity.

The City of Perth project has created significant interest from other authorities, private companies and residents. Media-television, radio and print are issuing follow-up stories as community interest grows.

Funding for the tree planting project is sourced from income from people using their cars to commute into town and park in the City's car parks. It is a "polluter pays" approach to climate change objectives.

IV. THE FINANCING FRAMEWORK DEPENDS ON THE POLICY'S AIMS AND THE TYPE OF PROJECTS TARGETED

The financial package used for local authorities' voluntary offsetting initiatives comes from various sources, regardless of whether they are internal (local authority budget) or external (taxes or private capital) (Table 6). The financing vehicles also vary: the credit purchases and/or sales can be made directly or via a dedicated framework. The choice of framework does not appear to be a determining factor for the success and long-term survival of voluntary offset programmes. In contrast, local authorities that have more ambitious offset targets, that are aiming for projects with ancillary community and environmental benefits, and that are seeking to attract private capital are often those that put a dedicated financing framework in place. Conversely, direct purchasing is favoured by local authorities that are looking to offset a small amount of emissions quickly, and to retain full control over the projects selected.

Table 6 – Summary of the financing frameworks selected by the local authorities that we studied

Local authority	Financing vehicle			Source of financing		
	Sale of carbon credits	Direct purchase of carbon credits	Dedicated framework	Fines	General budget	Private capital
Eastleigh			✓		✓	✓
Perth		✓		✓		
Ile-de-France		✓			✓	
Aquitaine			✓		✓	✓
Toronto			✓		✓	✓
British Columbia		✓	✓		✓	✓
Chicago			✓	✓	✓	✓
San Francisco			✓	✓	✓	✓
Chautauqua	✓				✓	✓
Seattle		✓			✓	

Source: CDC Climat Research.

A. Three possible sources of financing: fines, general budget and private capital

Fines or taxes: San Francisco offsets on a constant budget basis

Half of the City of San Francisco's emissions are generated by the transportation sector. The City wanted to show the advantage of a voluntary offset initiative through starting by offsetting the CO_2 emissions generated by employee travel. In doing so, it hoped to create a domino effect among other players in the area.

The local authority decided to act in several stages. First, a system for reporting trips and the corresponding CO_2 emissions was put in place. Next, the authority introduced fines for each trip made by City councillors. For example, a surcharge of between US$80 and US$90 will apply to a return flight between San Francisco and New York. The expected result is that City Councillors will reduce their travel, and therefore their emissions, in order not to exceed their "travel" budget. In addition, the surcharge has been calculated in a way that enables the additional resources that it generates for the City to offset the residual emissions linked to employee travel.

San Francisco will also offset its emissions by financing projects in its area through a dedicated local framework. The City has been purchasing credits generated by all kinds of projects since 2007, on condition that those projects are implemented in California. San Francisco's dedicated framework finances the projects, collects the credits, and may also sell them to other players, who are either residents or companies located in the area, for their own voluntary offset programmes.

The advantage in using these economic incentives is that end-users bear the cost of the effort. The latter are directly encouraged to change their behaviour in order to reduce their expenses. This is the idea that the City of San Francisco applies to employee business travel, although it is the employee's division rather than the employee himself which pays the fine. In addition, the local authority can invest in other projects thanks to the additional income generated. However, fines and taxes are often unpopular, and are not necessarily the simplest measures to implement, or the most effective, as they require a strong political commitment.

We were not able to arrange a meeting to obtain further details.

The role that the Province of British Columbia's general budget plays in making its public sector carbon neutral

Deducting the required funding for offsetting from the general budget enables the singling out of any activity that would otherwise have been fined. It is therefore also a less effective solution when the aim is to reduce emissions at source. British Columbia has solved this drawback by linking carbon tax relief, which encourages its public sector to offset, to a subsidy for improving energy efficiency, which enables emissions to be reduced over the long term.

In 2007, the Province of British Columbia undertook to reduce its emissions by 6% by 2012 compared with 2007, by 18% by 2016, by 33% by 2020 and by 80% by 2050. Moreover, the Province also introduced legislation aimed at making the area's public sector carbon-neutral as early as 2010 (schools, hospitals, universities, and health and public authorities). In addition, the law requires every elected public representative to assess and monitor their travel emissions. The Province has developed a tool for this purpose.

A dedicated public framework, known as the Pacific Carbon Trust (PCT) was created in March 2008. It has two objectives:

- supplying high-quality carbon credits to public and private organisations. The public sector is required to buy the carbon credits intended to reduce its emissions from this framework;
- supporting the Province's involvement in developing carbon markets, including the Western Climate Initiative (WCI), of which British Columbia is a member.

The PCT finances projects that comply with the following conditions: (i) they are based in British Columbia; (ii) they provide proven added-value; (iii) they have been accredited by an independent third party; (iv) the emission reduction is sustainable; (v) they are recognised only once (no double counting); (vi) there is no carbon leakage; and (vii) they comply with British Columbia regulations for offsetting emissions. These conditions were established based on internationally recognised quality standards, although PCT's projects are not certified by any of these standards.

The projects are implemented by private players. Examples include the following: a biomass gas plant at the Kruger Products Ltd paper company, which generated 16,027 carbon credits in 2010; and improvements to The Darkwoods Property's forestry management procedures, which generated 405,000 carbon credits in 2010. The carbon credit purchase price has been set at €18 (C$25) per tonne.

Schools spent €3.2 million to offset their emissions in 2010, while health authorities spent €3.9 million over the same period. In exchange, they received around five times the amount invested (i.e. around €18 million each) through energy-efficiency financing projects, together with carbon tax refunds. The health authorities estimate that their operating costs will fall by between €3.6 and €4.3 million each year once these efficiency projects have been completed.

The public sector represents only 1% of the GHGs generated across the whole area. However, the authority is banking on the increased awareness that the sector may generate, and on the change in behaviour that it may encourage among almost 300,000 public servants and close to 2 million residents, who live and study in, or visit the area.

On the difficulty of attracting financing from local private players: Eastleigh County Council

Local authorities often hope to involve private players in the financing package of voluntary offset programs, either from the outset or over the longer term. In theory the leverage effect achieved significantly increases resources and the capacity for action while simultaneously spreading the financial effort and the risk among multiple investors. It also imposes restrictions on the type of projects that are financed. In the Eastleigh County Council's case, the difficulties encountered in attracting this financing were linked to the nature of the project, which was characterized as not sufficiently "community-oriented". More generally, private investors are often attracted by the option of reselling the credits, which implies certified projects with strong ancillary social and environmental benefits. This was the case for Toronto and the Aquitaine Region, among others, which are discussed below from the financing vehicle standpoint.

Eastleigh's aim is to offset the portion of its direct emissions that cannot be eliminated, in order to be carbon neutral for the London Olympic Games in 2012. In order to achieve that aim, the local authority is going to reduce its emissions as much as possible and to invest in projects, including ones that aim to improve energy efficiency, where the emission reductions are at least equivalent to the residual portion of its emissions. Eastleigh requires projects to be based in its area in order to receive financing.

It therefore established a dedicated local framework in February 2008 in which it invested £50,000 (€63,000) and which is managed by the local authority. Other players in the area (companies, community groups and residents) are being invited to take part in exchange for carbon credits. The purchase price for these credits has been set at £10 (€13) per tCO_2e, and the amount is reviewed every year. Eastleigh is not involving a quality standard. Employees in the local authority's sustainable development department are responsible for managing the dedicated framework and for setting up partnerships.

Eastleigh and its dedicated framework did not meet with the success expected. Only two local bus companies are subsidising community projects, in order to improve their brand image. In addition, the authority is asking property developers to finance the dedicated framework if they are unable to comply with the local regulatory requirement to have 20% of their buildings' energy requirements met *in situ* by renewable energies like solar panels. According to Eastleigh, several local authorities in England are applying this principle, however none, to its knowledge, have offered local players the option of offsetting emissions via a dedicated framework.

B. Two financing vehicles: direct purchase and a dedicated framework

Direct purchase of credits is the preferred option for targeted or experimental projects

Direct credit purchases may involve credits that have already been issued, as in the case of Seattle and its Seattle City Light energy company. They may also involve future credits, as in the case of the Ile-de-France Regional Council and its initial decentralised cooperation project. In the second case, a full or partial pre-financing amount may be paid to a project backer before the emissions are reduced. The authority is therefore taking a risk in the event that the project fails or does not perform according to expectations. In exchange, this method offers maximum control over the selected project – which may be just an idea that the local authority then alters – and enables the financing of high-risk projects, which would not have obtained credits without political support.

In both cases, the authority can assess the quality of the project backers and optimise costs through a tender process. However, this option requires the authority putting the tender together to spend more time and acquire a more in-depth understanding of carbon offset mechanisms. The Ile-de-France Regional Council started the process with a targeted purchase, before putting out a tender once it was more familiar with the offsetting issue.

Seattle is setting its power company a carbon neutrality target.

The Seattle Climate Change Plan was drawn up in 2000. In 2003, as part of the plan, Seattle asked Seattle City Light (SCL), its publicly-operated power company, to become carbon neutral. The company, which is controlled by the authority, actually has a sizeable impact on Seattle's direct emissions: its emissions are three times as high as those of the other services internally managed by the City.

SCL sold its only coal-fired power station and increased the share of its electricity from hydropower to around 90%. At the same time, it launched a major energy efficiency programme. At the beginning of each year, SCL estimates the credit purchases required to offset its residual emissions. During the year, it readjusts its estimates based on energy consumption, and purchases offset credits as needed. In good years, SCL has no emissions to offset and therefore does not purchase any credits. In years that are not as favourable, SCL may buy between 150,000 and 230,000 credits.

SCL is a member of the CAR and of The Climate Registry, which has enabled the company to familiarise itself with the voluntary market and to operate in that market without intermediaries. The company buys credits that are certified by the CAR or the VCS, preferably from projects in the region or in the United States. Typically, SCL has purchased carbon credits from projects implemented at US waste disposal sites and cement plants.

SCL has been carbon neutral since 2005, and publicises its actions through its website or at conferences. The company, like Seattle's local officials and residents, is very concerned by the issue of climate change due to their dependency on hydro-electricity.

However, despite its shared goals, SCL has found it difficult to achieve a consensus on the programme's methodology and implementation. A large number of discussions and a programme for familiarising the public, NGOs, academic circles, and local officials were essential. It was essential to reiterate that the carbon footprint of SCL had to be reduced as much as possible before proceeding to offsetting.

SLC will continue to buy carbon credits and would specifically like to provide more encouragement to local projects, in order to help the City meet its targets. Seattle is currently examining the option of offsetting all emissions in its area.

Ile-de-France: from buying third-party credits to including the carbon constraint in the budget

In 2008, the Ile-de-France Regional Council was the first council in France to commit to offsetting the emissions linked to its officials' and representatives' travel. This offsetting process is to be extended to all the emissions identified by the Carbon Report® (Bilan Carbone) on the body's property and services, as specified in resolution CR 78-07 of 2007.

In order to offset the GHG emissions linked to officials' and representatives' travel, the region decided to finance projects as part of its decentralised cooperation programmes. The first project was entrusted to a charity, in order to enable it to implement a bio-charcoal[6] development programme in Mali, at a cost of €75,000 for an expected 7 000 tCO_2e of emissions reductions. For the second project, the authority launched a tender; an amount of €60,000 was awarded to a voluntary organisation whose programme for distributing improved ovens in Cambodia had already generated credits.

Offsetting all the emissions generated by the Regional Council would result in additional expenditure of €6.7 million, at a price of €15 per tCO_2e. This expenditure is hard to envisage in the current era of financial constraints. In addition, funding international projects solely from the Department of the Environment's budget is not an attractive enough option to encourage all the authority's officials to reduce their internal emissions.

This observation has led the Region to suggest a Voluntary Climate and Energy Contribution (VCEC) as one of the measures in the Regional Climate Plan, which was adopted on June 24th 2011. The principle of that plan is for each administrative service within the Regional Council to make a contribution equivalent to its emissions. The funds raised would then be dedicated to measures aimed at reducing internal emissions. A portion could nonetheless still be channelled into third-party offsetting. The launch of a study during 2011 will enable the operational feasibility conditions for this new system to be defined in more detail.

The VCEC therefore aims to promote investment in reducing emissions, and adaptation, by preferring more sustainable choices at the Regional Council level.

The dedicated framework as a catalyst for local authorities' climate policies

Local authorities that have chosen a dedicated framework often hope to get private players involved in the financing process, from the outset or over the longer term. A dedicated framework is also meant to guarantee the proper management of projects and of the committed financing. Depending on its legal status, as a not-for-profit organisation or a company, setting up a dedicated framework is a more or less simple and quick. Toronto, the Aquitaine Regional Council and the Province of British Columbia opted to pre-finance part of the credits that the framework will generate. The framework may adopt various legal statuses: a fund for Chicago, a voluntary organisation for the Aquitaine, and a public company for British Columbia. In each case, the framework is expected to attract private capital and/or to sell credits to the private sector.

Toronto to seize an economic opportunity and to position itself strategically in terms of anticipated regulation

In 2005, the City of Toronto defined a policy that aimed to sell offset credits generated from municipal operations to the Government of Canada's Climate Fund. However, the fund was never implemented thereby rendering the City's policy largely ineffective. Toronto adopted a Climate Change Action Plan in 2007, that sets its GHG emission reduction targets at 80% by 2050, compared with a 1990 baseline. The 2009 energy strategy specified how those targets would be achieved, primarily by using the financing of emission reduction projects through the voluntary offset markets as a catalyst. In the same year, the Province of Ontario, where Toronto is the largest city, announced that it planned to cap GHG emissions and eventually introduce regulations as part of its membership in the Western Climate Initiative (WCI). The idea of using voluntary offsetting therefore aims both to raise financing in order to meet the City's emissions reduction targets and to prepare for future province-wide regulation.

The initiative was inspired by various carbon offset sales involving the Greening Canada Fund and the Toronto District School Board (TDSB), the authority responsible for public schools, which signed a C$1.7 million agreement on the sale of carbon credits from major TDSB consumption reduction projects. The details of the agreement are confidential, but it has nonetheless convinced City of Toronto officials that offset projects are viable.

[6] Capturing carbon in the form of charcoal on agricultural land.

The Toronto Environment Office (TEO) is responsible for studying ways of using voluntary carbon markets[7]. It has recommended that priority be given to selling the carbon credits generated by local emission reduction projects to large companies based in Toronto that have committed to reducing their emissions. The companies involved to date include banks, accounting and legal firms.

Offsetting could therefore represent a new source of income for the City. Toronto's foray as a seller in the voluntary is expected in 2012, pending approval by Toronto City Council on the proposed policy framework. Eligible projects include the energy efficiency of municipal buildings, capturing methane from waste disposal sites, and renewable energy projects, etc. The income generated by the sale of carbon credits is expected to flow into a new reserve fund aimed at supporting the authority's future environmental initiatives.

The TEO recently organised a consultation event involving stakeholders, which brought together around 40 representatives from companies, academia and non-governmental organisations. This event will be followed by an announcement on the City's website, which will be updated on a regular basis.

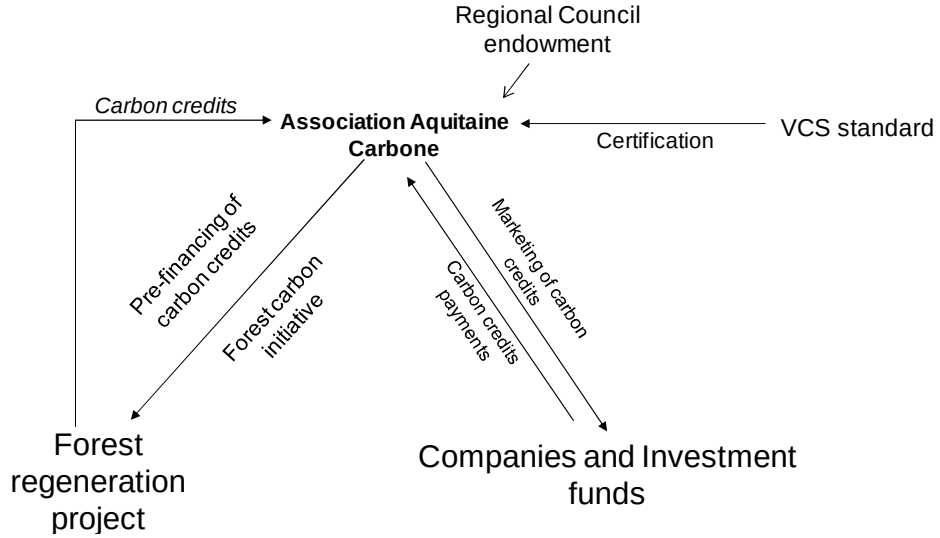
The Aquitaine Region would like to support the forestry sector and to attract private investors

Huge storms, such as Hurricane Klaus in 2009, reduced the Aquitaine region's forestry resources by 50% between 1999 and 2010, making the reforestation of around 200,000 hectares a necessity. As it happens, the forest had been used to offset all the region's greenhouse gas emissions and a partial conversion of the area affected by the storm into cornfields was and continues to be feared. The Regional Council has therefore set itself the target of strengthening the forestry sector by supporting reforestation and using wood to produce energy.

The idea of offsetting has been widely discussed by officials, as some were worried that offsetting would become compulsory and turn into a new tax. In the end, the Regional Council opted to pre-finance voluntary carbon credits in Aquitaine. The funds are allocated to a dedicated framework, the aim of which is to attract other financial backers than the Region, and to be self-funding in the long term thanks to the sale of credits.

Set up in May 2011, the dedicated framework will have €500,000 in its first year, while the total provisional budget planned for the period between 2011 and 2015 is €5 million. The framework will be operational from November 2011 onwards. Its status as a voluntary organisation gives it more administrative flexibility. The way the Association Aquitaine Carbone works is outlined in Figure 6.

Figure 6 – The role played by the dedicated framework and by stakeholders



Source: CDC Climat Research.

[7] The TEO therefore set up a working group involving all the local authority departments, the largest of which were the waste disposal, infrastructure management, water, electricity and transport departments. The group put forward suggestions for amending the offset policy, which the elected officials must approve in September 2011.

Its aims are: i) to implement voluntary offset projects; ii) to take part in certifying offsetting methods using independent certification bodies; and iii) to take part in offset method research and experimentation programmes.

The potential purchasers of voluntary carbon credits are companies, including banks and insurance brokers. As these companies demand quality standards, the organisation is moving towards using the VCS standard, which is the most frequently used internationally, to certify its projects. The dedicated framework will buy the carbon rights to forest owners and will take care of the certification process. The reforestation target after the Klaus storm is set at 20,000 hectares per year, and the dedicated structure plans to diversify the type of projects financed over the long term.

Aquitaine is the first French authority to set up a dedicated framework.

Delegating the management of the dedicated carbon structure to a third party: Chicago

The City of Chicago would like to raise awareness among its residents, companies and other institutions, which are major greenhouse gas emitters, in order to meet its target of reducing the area's emissions by 80% by 2050 compared with 1990. Players in the area are being called upon to reduce their emissions and to play a part in financing the City's offsetting strategy. Chicago plans to invest in projects linked to renewable energies, to energy efficiency, to collecting and destroying substances that harm the ozone layer, to planting trees, and to collecting and destroying methane in its area.

Chicago is working with the Delta Institute, which is responsible for setting up and managing the Chicago Offset Fund on its behalf. Thanks to this dedicated framework, Chicago is financing the action programmes scheduled in its Climate Plan. The dedicated framework should enable 13.43 million tCO_2e to be avoided between now and 2020. Only projects based in the State of Illinois will benefit from its support. This tool will also enable other players (private individuals and companies) to offset their emissions by buying credits generated by local projects.

We were unable to set up a meeting to obtain further details.

CONCLUSIONS

Compared to the regulatory market, the voluntary market is small.

Players prefer the first market, which is significantly more liquid and financially attractive. However, the innovations enabled by voluntary standards make voluntary offsetting a useful tool, particularly for pioneering initiatives.

Local authorities play a marginal role in the sale of carbon credits on the voluntary market

In terms of the supply of voluntary credits, authorities that play an active role in the market are still marginal, representing 3% of the total supply from existing projects. This very low representation can be explained by the fact that a local authority generates only a small portion of the emissions generated in its area directly.

The sale of carbon credits is done principally by US actors

The local authorities that sell on the voluntary market are those that cannot offer their offset credits on the compliance market. This explains the significant percentage of US sellers in the voluntary market (as the United States did not ratify the Kyoto Protocol, they cannot host JI or CDM projects), or the early sellers in countries that were subsequently able to implement JI or CDM projects. US local authorities have generated credits mainly through capturing methane from their waste disposal sites, in order to reduce the cost of the investment and to anticipate future regulation.

Most local authorities prefer to buy carbon credits generated by geographically-local projects

Given their national and local context, offsetting enables authorities to take action for the environment and to support the local economy through geographically-local projects. Most local authorities seek to obtain major ancillary benefits from such projects, as they are an important factor for their tax payers.

The financing vehicle selected depends on the size of the programme and the type of project targeted

Several economic incentives are available in order to meet the authority's targets. The various case studies show us that a wide range of tools is already available to local authorities and than none seems to be a panacea. For instance, the Ile-de-France Region used direct purchasing in order to make rapid progress and to remain fully in control of the choice of project. Local authorities often use a dedicated framework in order to offset the highest volume of emissions possible and to attract co-investors. This option encourages them to choose certified projects with significant ancillary social and environmental benefits, which are the only ones likely to attract private investors.

The keys to successful offsetting: a policy that is clearly defined and shared with local players

Defining an appropriate policy is the most crucial step: for example, Perth's success relied to a great extent on accurately identifying the requirements that need to be met, as well as expectations. From that point, the solution that is most likely to meet those requirements became clear, and tenders enabled the best project backer to be selected.

A target that is shared by local players is also very important. Where Eastleigh is concerned, the dedicated framework was not financed by private individuals or companies, as projects focused only on the energy efficiency of individual houses. The residents did not see the advantage of financing improvements for their neighbours, or instead of them. To solve this problem, the authority is going to allow the dedicated framework to finance other community projects as well. The action taken by the Toronto Environment Office has raised awareness among several City departments, and various discussions with local players have enabled their understanding of the challenges of offsetting to be improved, and their expectations and recommendations to be included. Likewise, the Aquitaine Region discussed its project at length, specifically to ensure long-term support from officials and from the local forestry sector. The same kind of consultative process enabled the Ile-de-France Region to refine its project over time.

APPENDIX 1 – REPORT METHODOLOGY

The methodology for this report included two stages. The first stage consisted in analysing the projects registered with the four main voluntary market certification bodies, which represent 85% of the global certified credit supply.

An examination of their databases, conducted in late 2010, enabled us to identify projects that involved a local authority and had already generated credits. The process was combined with an analysis of the project description documents (PDDs) using a key word search[8] confirmed by reading the PDD, in order to identify projects in which a local authority was involved.

The second stage consisted in semi-directed interviews with the main players involved in major initiatives, in order to check and increase our understanding. Our research was therefore conducted directly with auditors, offset operators, non-government organisations, multi-lateral institutions, and local and national authority representatives.

As was the case for the OECD-CDC Climat report (Clapp *et al.* 2010), the access to financial data was limited. This was especially the case for the voluntary market, as transactions are only rarely concluded on exchanges that publish their prices.

[8] As the PDDs were in English, the key words were: city, municipality, county, and urban

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