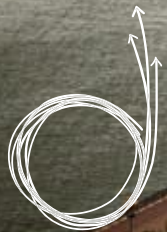


# CITIES & ENVIRONMENT, CREATING SUSTAINABLE WEALTH

ENVIRONMENTAL SUSTAINABILITY:  
MAINSRING OF ECONOMIC RESILIENCE  
AND SOCIAL BENEFIT

CASE STUDIES



**FMDV**

Supporting local authorities  
to access funding



The FMDV, founded in 2010 on the initiative of Metropolis, United Cities and Local Governments and 34 founder members (cities and city networks), is a political organisation promoting solidarity between local authorities.

It supports contracting authorities by providing local governments with technical expertise and financial engineering to help them access financial resources that match the needs they themselves have defined, and on the best possible terms.

Its operating and coordination methods promote a multi-partner culture based on dynamic cooperation and exchanges between local authorities, notably South-South or through South-South-North triangular partnerships.

The FMDV's financial engineering expertise focuses on reviewing local authorities' technical and financial skills and capacities and providing concerted support to staffs (capacity building, training, skills transfers and strategy and tool management). It also supports the design and development of project strategies and financial vehicles that give programmes access to long-term financing.

This dual concerted approach through technical assistance to rethink urban planning and financial engineering tailored to ensure it, benefits from sustainable financing, empowers local authorities, elected officials and technical staffs to design, develop and evaluate their own resilient development projects, depending on the coherence and potential of their territories.

The FMDV develops local stakeholders' interconnectivity, among themselves and with their national and international partners, as well as community participation, ownership and responsible well-being (solidarity, inclusion and cohesion).

It acts as a technical spokesperson for local authorities towards their partners, international fora and financial institutions, by leading the debate on endogenous urban development financing via the publication of reference works on the topic, thematic case studies and the organisation of seminars, based on the policy directions of its members and on partnership opportunities.

[www.fmdv.net](http://www.fmdv.net)



# CITIES & ENVIRONMENT, CREATING SUSTAINABLE WEALTH

## ENVIRONMENTAL SUSTAINABILITY: MAINSRING OF ECONOMIC RESILIENCE AND SOCIAL BENEFIT

**O**ur societies and economies are experiencing a complex and slow transition, which local authorities need to address without delay. In view of the upheavals ahead, this economic, social and environmental transition requires them to take on new unprecedented responsibilities. And today we need to collectively devise and implement a sustainable development model that is fully in line with this aim.

To this end, the integration of the ecological and social dimensions into our planning and development policies is an arduous process. It is already underway, but over the long haul. And each and every one of us needs to support it and stimulate it, at our level and by using our own competences and skills. The fight against environmental, economic and social insecurity is, in this respect, our overriding priority and our number one challenge.

For several years now, local and regional authorities have been taking stock of the political, economic and social challenges posed by this transition: support job creation and social innovation, increase business attractiveness and synergies between the economic world and academic worlds; adapt vocational training pathways; invest in research and development programmes; transform our public administrations, their organisation and tools; increase transparency and the participation of all to ensure that citizens take full ownership of the challenges and the responses to them.

These are all ways for local authorities to speed up the ecological changes in their administrations and territories.

This publication provides us with a first collection of examples of the political innovation that we are all called upon to take up together. And I would first like to thank the authorities of Vancouver (Canada), Monteria (Colombia), Grand Lyon (France), Semarang (Indonesia), Tubigon (the Philippines), Cape Town (South Africa) and Växjö (Sweden), as well as their partners, for having allowed us to study their initiatives and report back on them here for the benefit of all.

We still have a long road ahead of us, but we can be proud of these experiences and the convictions on which they are based, and draw inspiration from them in order to scale up their implementation worldwide.

And we need to do this in a cross-cutting manner and over the long term by proposing new governance models.

We also need to devise this transition and its implementation with all stakeholders: governments, local authorities, civil society and the economic and social world.

This is indeed the prerequisite for its success, an ambition that I wish, as President of the Global Fund for Cities' Development (FMDV), to share with you through this publication.



• **Jean-Paul Huchon**  
President of the Global Fund  
for Cities' Development (FMDV)  
President of Metropolis  
President of the Ile-de-France  
Region

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in partnership with  
Veolia Environnement

# BUILDING A SUSTAINABLE URBAN FUTURE: CITIES TAKE THE DRIVER'S SEAT

*It is recognised that the world today is more complex than ever before. This is indeed what local authorities experience every day when discharging their regular responsibilities. They are at the forefront of wealth creation and production, and yet are invariably the first to carry responsible commitments made at the international level. They unite hopes and dreams, attract skills and provide recognised momentum for social progress – as best they can and against all odds –, which testifies to their daily involvement in the communities who govern them.*

### INCREASING PRESSURE

Faced with the need for a sound and balanced management of their local public service missions, local authorities still do not, however, benefit from sufficient transfers of power, skills and resources from their supervisory authorities. They are the first to experience changes, and for several years, have been absorbing repeated and violent societal shocks that the projected explosion in global urbanisation is expected to exacerbate. Even more frequently, as globalised economic and financial distortions increase and fuel health, food, social, political and ecological crises. This increases inequalities and competition to the detriment of solidarity between citizens, territories and cultures.

While the 1992 Earth Summit in Rio de Janeiro had celebrated the territorial level as being the relevant scale for integrating and interlinking the four dimensions of sustainable development (environment, social, economy and culture), the Rio+20 Summit embodied political divisions and other thematic and cultural points of divergence. It was held against a backdrop of a crisis of civilisation but also in a geopolitical world which was recomposed, in the mid-2000s, by the emergence of the so-called “Southern” countries in the global diplomatic and financial arena. Yet in June 2012, during this latest multilateral summit, stakeholders were reminded of the urgent need to jointly, and as a priority, address the root causes of poverty at the global and local levels and the related problems, for they constitute major obstacles to the environmental sustainability of our activities and impacts on the planet and its resources.

### MOBILISATION AND ACTION: INSPIRING EXAMPLES

In this respect, the FMDV, with support from Veolia Environnement, wished to highlight local authorities which have, beyond “green controversies”, made the resolute choice to engage in processes and programmes combining environmental sustainability, economic efficiency and social responsibility.

Each, in its own way and depending on the context, its level of competence and its capacities, has grasped the reality of its social and ecological environment in order to initiate changes in local cultures of producing, consuming and living together.

For each case study, we have not sought to be exhaustive, but to introduce the specificity of the differentiated approach by which the local authority has decided to address the challenge posed by the sustainability of its territorial project, faced with the reality of political will, the mobilisation of local stakeholders, its financial resources, the organisation of its administration and the availability of the corresponding skill requirements.

Each example illustrates a specific approach chosen by these local authorities to implement – either systematically or on a programmatic basis – the combination between the day-to-day management of its territory and changing the ways of thinking, dialoguing and taking action.

Like other local authorities which have set out on the same sustainable path, their approaches converge towards the objective of creating new mechanisms and tools for decision-making, financing, information and the participation of territorial stakeholders, united around the same common vision of the challenges, emergencies and needs to be taken into account.

### COMMON AND UNIFYING AREAS

Beyond their cultural differences and the diversity of contexts and resources, we have observed the existence of pivotal areas that are common to each initiative.

**5 million**

**Every month, Southern cities have to absorb 5 million additional inhabitants, i.e. 95% of population growth in the world's cities.**

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These elements provide an outline of an integrated and operational approach, which other local stakeholders may draw on for their own projects:

- Sustained efforts for the regulatory, budgetary, institutional and systemic integration of the environmental dimension into their public administration. The aim is to implement cross-cutting strategies and programmes that take account of both the duty to preserve natural resources – a priceless capital – and that of access for all to basic services and the local economy,
- Strategic links and alliances with all territorial stakeholders (universities, companies, development agencies, NGOs, and particularly the most remote communities). The aim is to pool energies and expertise, strengthen ties of cooperation, solidarity, skills and help build a long-term territorial social contract by and for all,
- (Re-)enhancement of wealth and reaffirmation of local potential by effective and efficient reinvestment in the image it gives of the territory – an engine of revitalisation and mobilisation – both towards its external partners and its internal leaders. This is achieved through green territorial marketing with high added value for the attractiveness, dynamism and productivity of the local authority,
- Technological and technical monitoring by drawing on integrated environmental management consultancy and tools, to create clear and operational dashboards for policy decision-making, and to conduct a sustainable mapping of the territory and its desirable developments,
- Finally, proactive investment in a construction policy that is truly combined with a resilient –

more than being “simply” sustainable – multi-dimensional development of the territory. This echoes the increasing shift from the concept launched in the late 1980s by the Brundtland Commission towards practices and positions at the international level turned resolutely towards measurable, accessible and replicable action.

#### **PUSHING BACK THE LIMITS**

Each case has also allowed us to identify a number of limitations and obstacles. The most serious, which constitutes the challenge for each of the initiatives we studied, remains the search for alternative and complementary funding able to foster a hybridisation of resources and ensure that the action taken for the transition of territories, practices and awareness is sustainable.

However, by modifying the usual economic and financial reference frameworks – notably by comparing the contribution made by the programmes that are implemented with the pre-

dictable cost of inaction – each experience we have selected has initiated a sustainable transformation in its positioning and practices. By integrating natural resources and the inherent constraints posed by the need to preserve them as direct factors and catalysts of wealth creation, the local authorities presented here are initiating, at their level, a resolutely contemporary transformation in the ways of understanding and taking action.

This key point of access to sustainable funding for local authorities constitutes the rationale of the FMDV. Consequently, this publication paves the way for an in-depth analysis of the opportunities offered by the environmental sustainability of territorial projects as a cornerstone for economic resilience and social benefit for all.

We hope that you find this reading inspiring and invite you to visit our website [www.fmdv.net](http://www.fmdv.net) to continue the forward-looking analysis of these territories which, by being fundamentally responsible, are necessarily innovative. ●

**“Urbanization is inevitable (...) a positive force to be harnessed in support of social equality, cultural vitality, economic prosperity and ecological security. (...) The battle for a more sustainable future will be won or lost in cities.”**

Excerpt from *Manifesto For Cities* - June 2012 - World Urban Campaign



# SUMMARY

01

PAGE 8

## MOVING MOUNTAINS: CAPE TOWN CHANGES COURSE

### CAPE TOWN (SOUTH AFRICA)

Cape Town has decided to tackle the challenge of change by sustainably and collectively integrating the environment at the core of policy making. An example of inclusive institutionalisation, with strong impacts and added value for the city development plan.

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02

PAGE 16

## THE GREEN PROFUSION VANCOUVER (CANADA)

Or when a political proactive approach and territorial marketing unite stakeholders and investments around the "green challenge".

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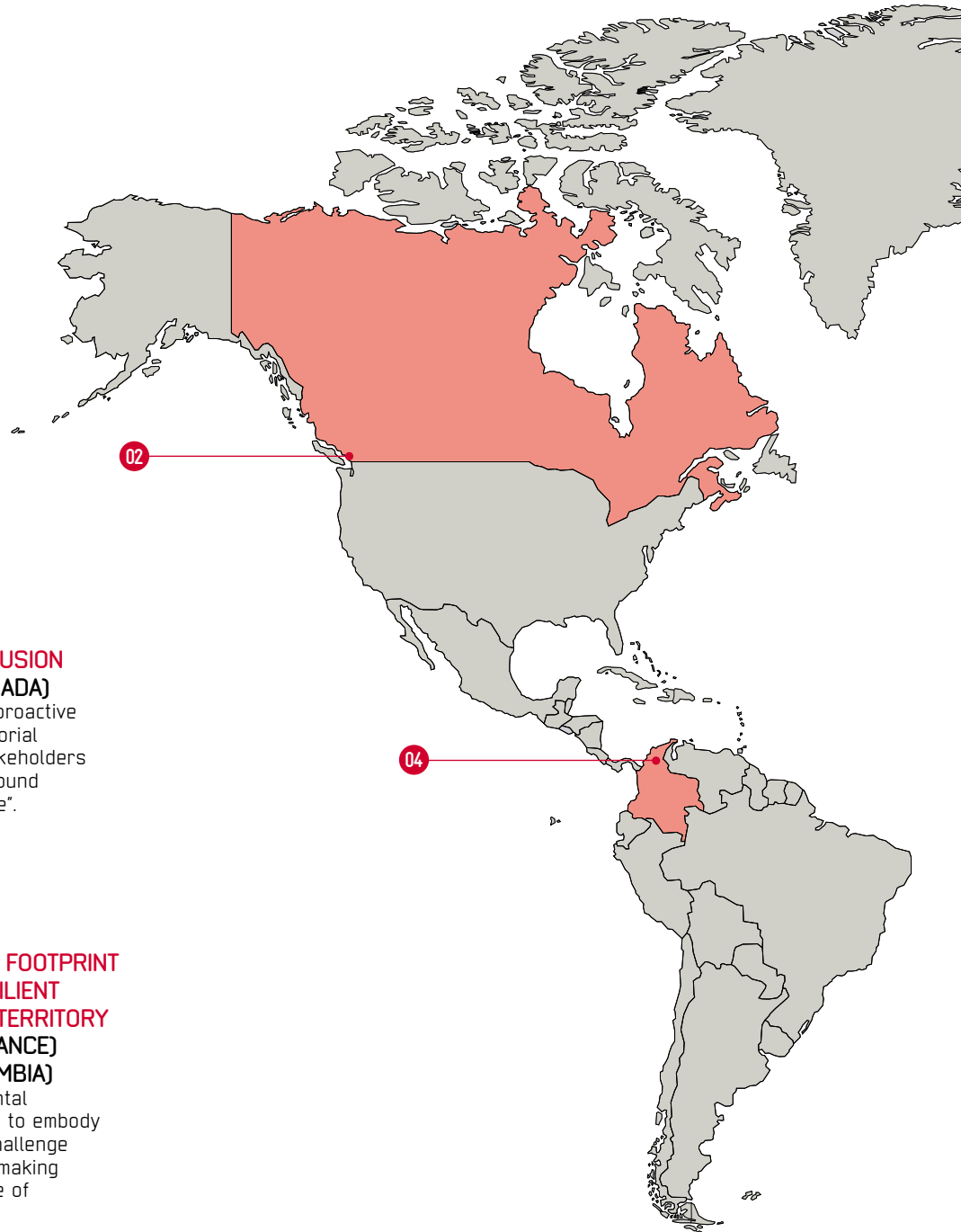
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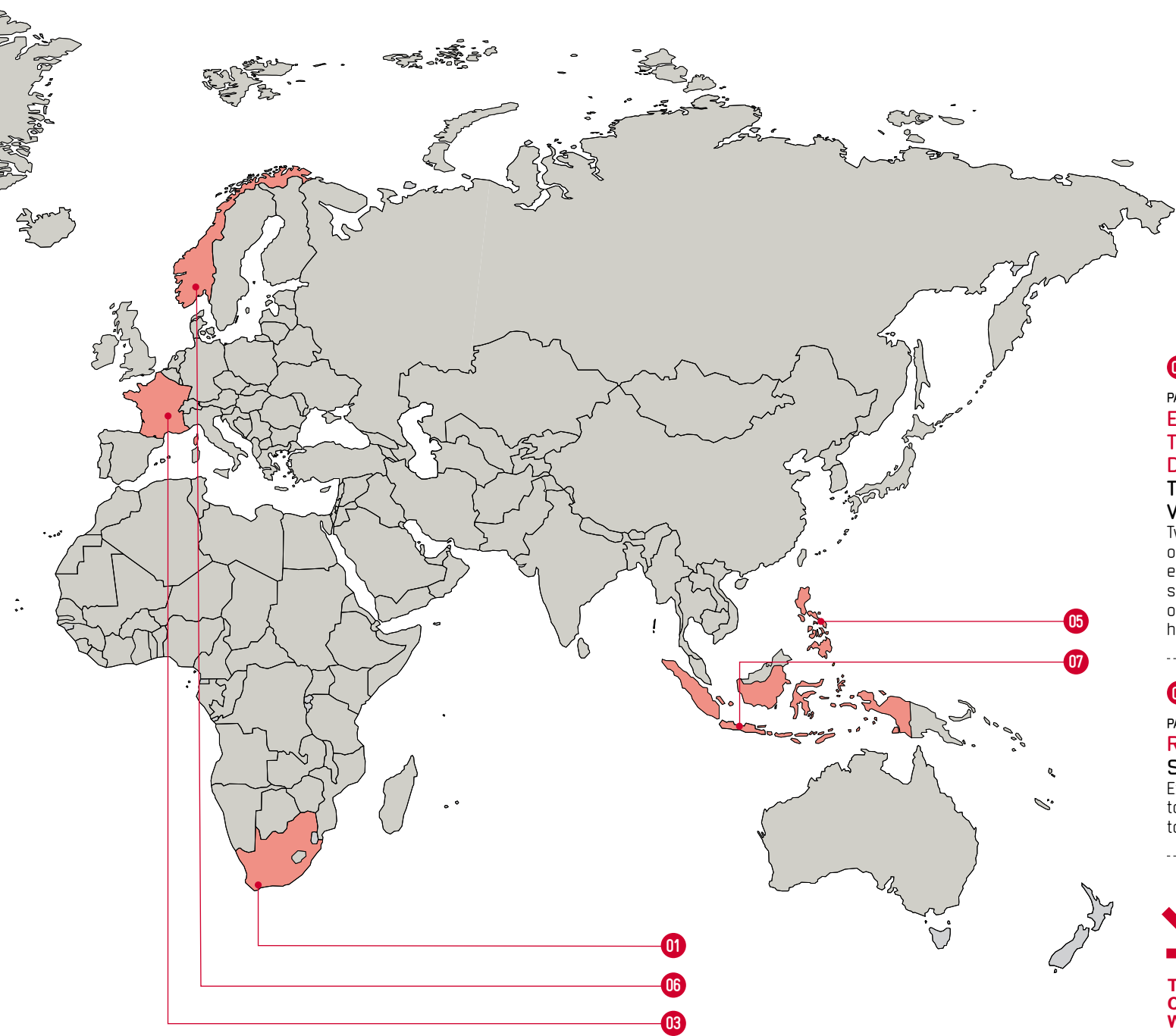
PAGE 26

## TOWARDS A LOW FOOTPRINT FOR A MORE RESILIENT AND ATTRACTIVE TERRITORY GRAND LYON (FRANCE) MONTERIA (COLOMBIA)

With the environmental footprint, innovating to embody the sustainability challenge and guide decision-making to secure the future of the territory.

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05 06

PAGE 34

**ECOBUDGET: RECOUNTING THE ENVIRONMENT DIFFERENTLY**

**TUBIGON (PHILIPPINES)  
VÄXJÖ (SWEDEN)**

Two cities, on opposite sides of the world, use the same environmental management system to "recount" the history of their territories, which they hope will "count" for the future.

07

PAGE 44

**RESILIENCE FOR & BY ALL  
SEMARANG (INDONÉSIE)**

Exploring the stages leading to collectively build resilience to climate change.



**TO FIND OTHER CASE STUDIES, VISIT  
WWW.FMDV.NET**

01

06

03



# MOVING MOUNTAINS<sup>1</sup>: CAPE TOWN CHANGES COURSE

## CAPE TOWN (SOUTH AFRICA)

Cape Town is endowed with both ocean and mountains. It covers an area of 2,500 km<sup>2</sup> and is home to 3.8 million people. The city enjoys an internationally recognised environmental wealth of exceptional biodiversity, which would appear to be impossible to reconcile with its many social and economic challenges.

Rapid urban sprawl, a disproportionately high carbon footprint and the difficulties of poor communities in accessing energy are combined with a low level of energy security, natural resources under threat and increased vulnerability to climate change.

The municipality has taken action by deciding to continuously integrate the environment into its policy. Its proactive approach seeks synergies between sustained economic growth and providing high-level, equitable services for its community. A commitment for the long haul.

<sup>1</sup> Cf. *Moving Mountains*, Cape Town's Action Plan for Energy and Climate Change, november 2011.

01





“It is a question of finding a ‘win-win’ compromise between a benefit of environmental integration, which can only be felt over the long-term, and immediate needs for the economic and social development of the city.”

Sarah Ward, Head of the Energy and Climate Change Unit – City of Cape Town



## CAPE TOWN (SOUTH AFRICA)

### SEEKING A COMPROMISE BETWEEN DEVELOPMENT AND REGIONAL RESILIENCE

Cape Town is South Africa's second largest economic centre with 10.6% of national GDP (after Johannesburg, 16%) and has a municipal budget of about EUR 2.58bn for the fiscal year 2011/12<sup>2</sup>. One of its main challenges is to eradicate economic and social inequalities which put a strain on local relationships between citizens (21% unemployment rate, 400% increase

“Cape Town acknowledges climate change as one of the greatest challenges of our generation but seeks to use it as an opportunity to build a better future for all.”

Excerpt from *Moving Mountains, Cape Town's Action Plan for Energy and Climate Change*, nov. 2011.

in electricity prices by 2016 - 2006 baseline) and between communities and their environment (carbon footprint of 7.82 tonnes per capita per year)<sup>3</sup>.

The city is seeking to address the twofold need for economic and social development on the one hand, and environmental preservation on the other hand. It has thus been working for over ten years to integrate an environmental strategy into its development policy. Consequently, several documents have been produced, which aim to implement and promote the sustainability of its territory (Integrated Metropolitan Environmental Policy in 2001, Energy and Climate Change Strategy in 2006).

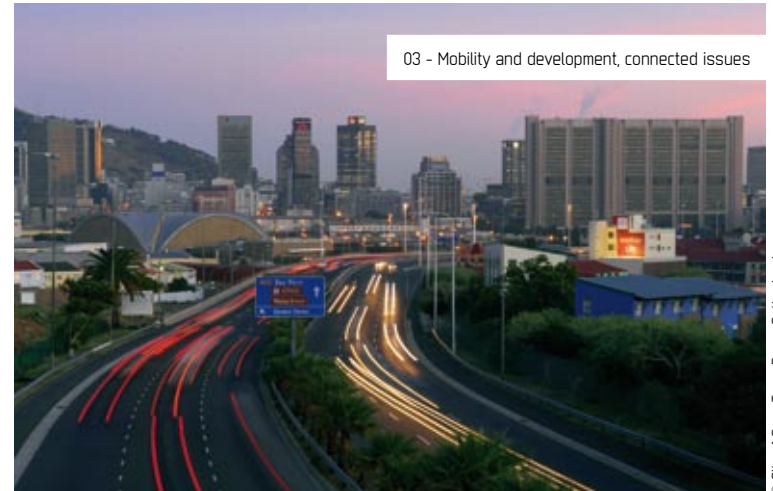
In 2011, an Energy and Climate Change Action Plan set out a series of environmental targets. This action plan will form the backbone of the decision-making process for developing urban projects that have a social and economic impact at the local level. Under the umbrella of climate change mitigation, this Action Plan constitutes the optimal phase in building regional resilience for all.

02 - Wind resources



© Sustainable Energy Africa

03 - Mobility and development, connected issues



© City of Cape Town, Bruce Sutherland

## ACTION THROUGH INFLUENCE: PLACING THE ENVIRONMENTAL STRATEGY AT THE HIGHEST LEVEL OF GOVERNANCE ACROSS ALL SECTORS

01  
Heading:  
Cape Peninsula, rapid urbanisation faces an uncertain climate future.

02  
The city strongly supports local power generation by establishing contracts with wind farms and invests more in renewable energies than in traditional energy sources.

03  
The improvement in transport networks (accounting for roughly 50% of Cape Town's energy consumption) will greatly contribute to reducing CO<sub>2</sub> emissions.

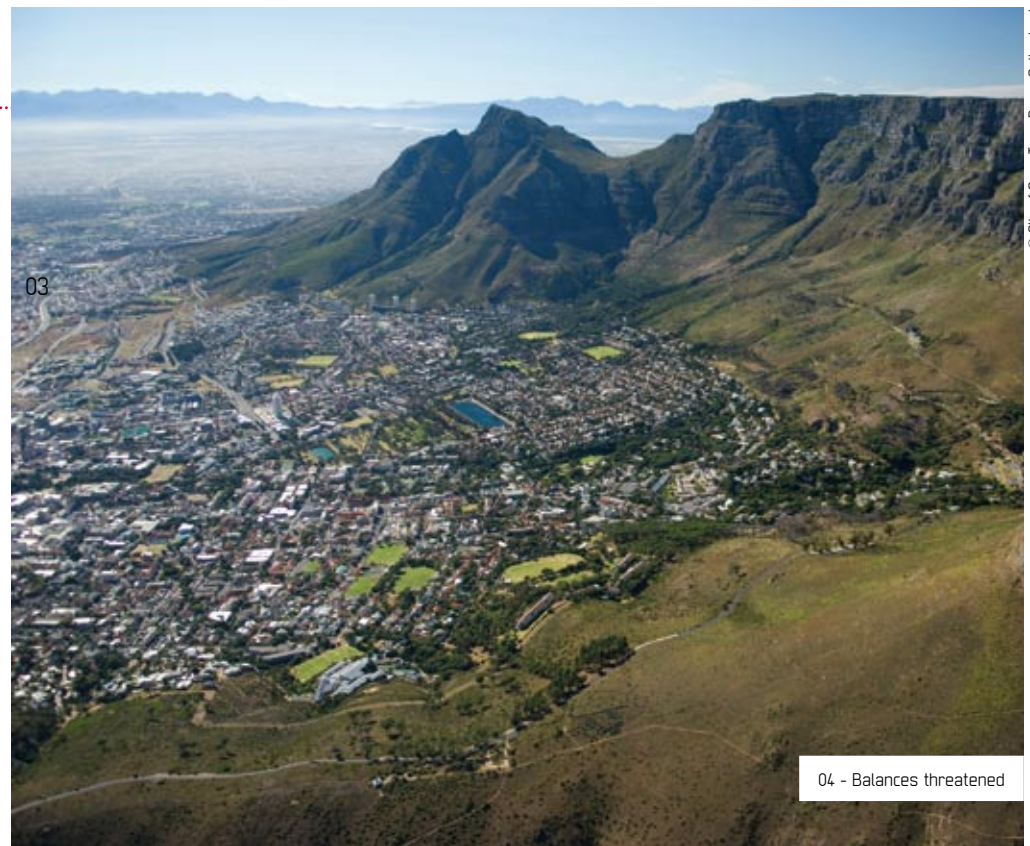
04  
Cape Town is home to both some of the richest biodiversity in the world and the greatest number of endangered species.

In order to come up with a series of 40 programmes comprising 120 projects combining economic, social and environmental issues, the city first and foremost defined a political and administrative framework. This framework establishes environmental issues as a guide for the political and administrative decision-making process. The Environmental Resource Management Department, a central entity, disseminates the environmental strategy across all the sectoral departments. It is made up of a qualified technical team able to spread strong messages to decision-making arenas.

### EFFICIENT INSTITUTIONAL ARCHITECTURE, DEDICATED INSTRUMENTS

Several instruments are used for this purpose, including discussion forums between technical departments and a series of committees which meet to discuss issues related to sustainable urban development.

A dedicated political body, the Energy and Climate Change Committee, was set up in 2009. It gathers together the Deputy Mayor and the City Councillors of each relevant department about 6 times a year to discuss the priorities of the city's political agenda. It is completed by an administrative subcommittee made up of the



© City of Cape Town, Bruce Sutherland

executive directors of the departments. These committees make it possible for the City to integrate environmental considerations into the political definition of urban strategies and encourages cross-sectoral implementation in each of the relevant departments and programmes. Thanks to this enhanced process, a chapter devoted to climate change adaptation has now been included in the Integrated Development Plan, a document setting guidelines for municipal budget priorities. Along the same lines, the Spatial Development Framework, an urban development instrument *par excellence*, restores balance to a city previously prone to segregation, promotes a denser urban fabric, and will now be supported by

Environmental Management Frameworks defined for each of the city's 8 District Plans.

A pilot phase for this initiative has been launched in the most sensitive townships of Mitchells Plain and Khayelitsha in order to define which areas to urbanise as a priority and which ones to preserve.

This process to integrate the environment into the urban planning system would not be possible without the presence of political leaders who are responsive to technical expertise and proactive in local innovation. Indeed, the implementation of sustainable urban projects can only be made legal, and thus binding, following the City Council's approval of these integrated environmental strategies.

<sup>2</sup> By comparison: Johannesburg has a budget of EUR 2.9bn in 2012 for 1,644km<sup>2</sup> and 4 million inhabitants.

<sup>3</sup> The ideal (equitable) value of the carbon footprint (1.3 tCO<sub>2</sub>/per cap./year) is the result of the research of the Intergovernmental Panel on Climate Change (IPCC).

## TAKING ACTION: PROJECTS WHICH PERMANENTLY COMBINE ENVIRONMENTAL POLICY AND SOCIAL AND ECONOMIC BENEFITS

The strength of this sustainability strategy also lies in continuously negotiated compromises for urban projects between the long-term impacts on the environmental sustainability of the area, and the direct benefits for the city's immediate social and economic development needs.

Two programmes, the Integrated Rapid Transit (IRT) system and Solar Water Heater (SWH) programme, are good examples of how communities' resilience is gradually being strengthened over the long term, along with an improvement in their living conditions in the short term. Following a resolute but long process of institutionally rooting environmental sustainability, they symbolise the municipality's desire to activate the hinge pin of its resilience for all policy.

### IRT AND SWH: THE "INITIALS" OF CHANGE

In a first case, in its drive to promote a compact, energy-efficient and accessible city, the municipality has designed a sustainable transport system combined with a policy increasing the density of the urban fabric focussed on transport axes and nodes. The IRT project, which was launched in 2010, was initiated for the Football World Cup. Phase I of the MyCiTi network invol-

ved adding 310 buses (8, 12 and 18 m) linking up the airport and other key satellite nodes in the north with the city centre, and phase II plans to serve outlying neighbourhoods in the south of the city.

In addition to a decrease in CO<sub>2</sub> emissions from a reduction in the massive use of private cars, this project will reduce the spatial inequality suffered by township residents by bringing poor residential areas (notably Cape Flats) closer to dynamic economic centres. Moreover, the strengthening of transport axes will boost the economy by creating new economic clusters along the lines.

This densification policy, combined with the creation of a more efficient transport system, is expected to generate savings of nearly EUR 1bn by 2030 (roughly 40% of the municipal budget). EUR 175m of investments have already been planned for this project for 2013 (phase II).

In the second example, the Action Plan for Energy and Climate Change intends to reduce the city's energy consumption by 10% by 2015, including 6% of savings from scaling up the Solar Water Heater (SWH) system technology in 400,000 medium-to-high income households which have an electric water heater. The aim is



05 - IRT project

© City of Cape Town, Bruce Sutherland



06 - Kuyasa SWH project

© City of Cape Town, Bruce Sutherland

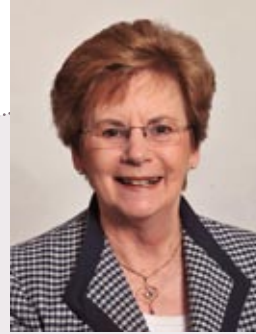
to eventually equip all medium-to-high income households and thus create 10,200 year-round jobs (related to the installation of the water heaters and the development of the solar sector) over the next 10 years. The cost of the programme is estimated at EUR 298m. Several initiatives have been launched to provi-



# 3

## QUESTIONS TO BELINDA WALKER

City Councillor for Economic, Environment and Spatial Planning – City of Cape Town



de this technology to the most vulnerable communities. A first project was launched in Kuyasa in 2006 (a neighbourhood in the township of Khayelitsha southeast of Cape Town) thanks to a partnership between the NGO SouthSouth-North, the City of Cape Town's Department of Environmental Affairs, the Provincial Housing Department, the National Department of Public Works, and the South African Export Development Fund.

The objectives were to reduce economic and energy poverty in the community by decreasing fossil fuel consumption, and therefore CO<sub>2</sub> emissions, thanks to the improvement in thermal performance in low-cost housing and the promotion of energy-saving lighting, and solar water heating for low-income households. The equipment of 2,309 houses has made water and electricity savings estimated at EUR 62 per household per year (for an average monthly income of between EUR 95 and EUR 285); there has been a reduction in respiratory illnesses in 81% of households and local professionals have been trained in these new technologies (65,000 work days have been created in the community for the project).

While each new housing construction for the medium-to-high income categories today integrates the SWH technology, the Kuyasa project is an encouraging start to eventually replicating this integration in 3 million low-cost houses, to be built by 2025: given the figures that have been provided, this scale-up will have significant macroeconomic effects. However, the SWH project is difficult to implement on a widespread scale due to the long process required to integrate this technology (cost and legal amendment) into the policies of the national government, which subsidises these low-cost houses.

### What kind of social and economic impacts do you think Cape Town's environmental programmes will have?

What we are planning for the future must make economic sense and sustainability, on this point, certainly does so. Environmental resources are particularly important for Cape Town, given our local wealth and its exposure to the impacts of climate change. Not taking them seriously, or planning without recognising their importance, means opening the door to expenditure for which we do not have the necessary funds and for results that will probably have no effect, given the upheavals ahead of us. Our policies must therefore integrate this dimension and give it its full economic and social translation.

### What consequences did the integration of the environment have on the decision-making process for urban planning?

The main success is to have managed to place sustainability in the mainstream and in the minds of officials and my political colleagues, and which they even apply when they carry out their respective duties: they now think and act "sustainable", beyond "simply" the question of the environment.

They no longer only take the impacts on the environment into account, they also examine the repercussions on the sustainability of urban projects.

### What advice would you give to other local authorities?

The first message is that they do not have to start from scratch. A lot of work has already been done and people are really willing to collaborate. I would look towards municipalities

that are in a comparable situation, not necessarily of the same size, but similar. I would ask for their advice: what has been done, and imagine, using this shared experience, what they can implement without having to go down the same road again. The process must also be led by a politician, a mayor for example, so that it is not an exotic project, but really a programme that needs to be applied rapidly. I would advise them to identify the available resources in the vicinity: universities or organisations such as ICLEI, or any other stakeholder in knowledge-sharing. They will need individuals and organisations that know how to access knowledge, then to convert this knowledge into a significant programme. You do not have to do everything yourself and by yourself! What is more, there is already a lot of knowledge online!

05 The IRT project will support equal access to mobility and the economy and promote a sustainable, high-density city.

06 The project to install solar water heaters in Kuyasa will contribute to the resilience of poor communities who used to spend up to 25% of their income for their energy needs.

## WORKING TOWARDS APPLIED ENVIRONMENTAL INTEGRATION: CREATING OPPORTUNITIES FOR PARTNERSHIPS, INVESTMENTS AND VISIBILITY

The implementation of the City of Cape Town's strategy requires significant institutional changes, strong technical expertise, a substantial investment capacity, effective management, and an alignment with high spheres of government. It is by developing new instruments that the municipality has managed to integrate environmental considerations into its institutional system, beyond changes in government. Practical mechanisms to establish a position on the environment (forums, strategy, training of technicians), measure these resources (environmental report, environmental management system) and include the environment in urban planning tools (environmental management frameworks) have brought technical teams together for a common project. The city's aim is to fully integrate these tools into the daily practices of sectoral technical teams in order to bring multi-faceted urban projects to fruition.

The municipality's capacity building also relies on a number of partnerships with NGOs (Sustainable Energy Africa, ICLEI), academic institutions (universities, research institutes), the public electricity company, and the Climate Change Think Tank.

The sectoral development agency Green Cape was set up in 2010 via a partnership between

the Cape Town Municipality and the Western Cape province in order to remove the existing barriers to the potential of developing a green energy economy and creating the related employment opportunities (for example, by establishing a competitiveness hub based on green technologies located in Atlantis, a town north of Cape Town, and promoting the development of the SWH technology on a larger scale).

This partnership culture provides essential technical expertise to meet environmental challenges and attracts a committed network of stakeholders from beyond the municipal sector.

Projects which include the environmental dimension require heavy public investment by local authorities. The multiplier effect of these pro-



**“The most important thing for a city to know is that to be taken seriously, the issue of energy and climate change deserves to be placed at the highest level of governance, centrally, and led by a strong department, with the use of all the required capacity.”**

**Sarah Ward**, Head of the Energy and Climate Change Unit – City of Cape Town





© Sustainable Energy Africa

07  
The improvement in energy efficiency in buildings will make a 22% energy saving over 7 years.

ket able to make the municipality's investments in the environment viable. Along the same lines, the reduction in CO<sub>2</sub> emissions (stabilisation at 20M tonnes in 2025 instead of 28 in 2010) will increase the green attractiveness to investors.

### CHALLENGES AHEAD

Although projects combining the reduction of environmental impacts and the social and economic benefit for communities have today proved their value, access to funding continues to be a major challenge for their implementation. Consequently, the municipality has strongly engaged in a search for funding.

The Kuyasa project, for example, has started trading on the carbon market via the United Nations' Clean Development Mechanism, an opportunity which should be replicated for phase 2 of the IRT project.

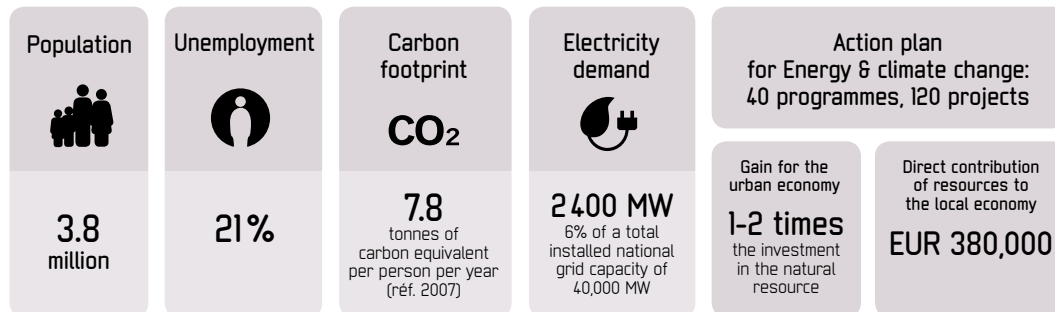
Other sources of financing may in the future come from the UN Green Climate Fund, as well as from identified national and international de-

velopment banks and from sustainable investment funds.

Moreover, these projects point to the question of the need to amend the legal framework concerning the municipality's powers and its capacity to control its urban planning. The ambitious projects, which today allow the municipality (which has been in the opposition since 2006) to build its resilience, all too often come up against the power of upper regional levels. Consequently, all projects are at one point dependent on funding or legal empowerment from central government, which seriously hinders environmental integration at the local level. Be it for the more sustainable construction of low-cost housing (national subsidies and mechanisms) or incentives to produce renewable energy locally (national competence), the municipality continues, meanwhile, to hold to a vision of a more long-term operation addressing vulnerable households, which will ensure it stays the course for its new sustainable directions. ●

jects on economic and social development must be visible. In the future, environmental projects may offer new opportunities for the creation of a market for green technology production and other related services, such as photovoltaic solar panels (today imported), which meet the need to both integrate the environmental dimension into the building sector and develop new manufacturing methods. If a "green economy" emerges, it will create an economic mar-

## KEY FIGURES



## THE GREEN PROFUSION VANCOUVER (CANADA)

In 2009, the Mayor of Vancouver, Gregor Robertson, gave new impetus to the city's environmental policy by launching the "Greenest City 2020" initiative: environmental issues are now not only seen as a challenge, but also as sources of sustainable opportunities. A challenge due to the urgent need to implement programmes to reduce greenhouse gas emissions.

Opportunities because the rapidly growing green economy sector is now seen as the main engine for economic growth, well-being and wealth creation at the local level. The municipality's approach is thus clearly based on a rationale for healthy competition with other cities and it uses the "green" argument as a way of making the city attractive and raising its international profile. And it has done an excellent job.

01 - False Creek - Vancouver







02



## VANCOUVER (CANADA)

### GREEN TERRITORIAL MARKETING: A DRIVER FOR THE CITY'S ATTRACTIVENESS

#### UNITING FOR PROGRESS: JOINT DEFINITION OF A 10-YEAR INTEGRATED ACTION PLAN

In February 2009, the *Greenest City 2020* programme was launched on the initiative of the Mayor. This planning tool aims to give the municipality the means to become the "greenest city in the world" by 2020.

A coordination team (*Greenest City Action Team - GCAT*), comprising 18 experts representing different stakeholders (city staff and elected officials, civil society, private sector and universities), was then tasked with defining ten goals, with quantified and measurable targets and the corresponding activities to be implemented.

It subsequently defined an integrated action plan (*Greenest City Action Plan - GCAP*), which takes up the activities to be implemented in the short term (priority projects for 3 years) and in the medium term (strategies for the period until 2020) via ten working groups comprising a team of city staff (from different departments) and a Committee of External Experts, all volunteers

representing different sectors (private, civil society and universities). A total of some 70 city staff and 170 institutions are involved in defining the action plan.

The GCAP was adopted by the City Council in July 2011 and dozens of priority projects are today in the implementation phase. The first annual report will be published at the end of 2012 and will present the progress made in implementation and the progression of the results.

The community's approval is essential to the success of a project of this magnitude. Consequently, the definition of the action plan involved an intensive consultation process with the community via a far-reaching communication campaign. According to the municipality, between 2010 and 2011, 35,000 people (almost 6% of the population) took part in the different activities (conferences, *Talk Green to us* Internet platform, workshops...) and 9,500 are estimated to have been actively involved. Andrea Reimer, the City Councillor in charge of the project, says that in 2009, 50% of the community supported the pro-

02 - False Creek



01  
Heading:  
the City of Vancouver  
combines skyscrapers  
and extensive nature,  
which illustrates the  
synchronisation between  
healthy economic growth  
and effective environmental  
enhancement, the hallmark  
of the "green economy".

02  
The Olympic Village  
located in the False Creek  
Neighbourhood is the  
greenest village in North  
America. In particular,  
it is a model in terms of  
green buildings, renewable  
energy and green roofs.

ject and 10% were strongly opposed to it, while 3 years later the approval rate had reached 85%. The re-election of the mayor in December 2011 also shows the widespread support for the initiative.

Partnerships have been established between the municipality and local NGOs, companies, traders, universities and research institutes in order to scale up the involvement of local stakeholders. In addition to pooling the expertise of these different stakeholders, they also disseminate information to specific networks and thereby promote project ownership. According to Andrea Reimer, "The local actors own the plan as much as we own it and it makes it really alive in the community". Jennie Moore, a researcher at the *British Columbia Institute of Technology*, says that the programme has helped strengthen the social dialogue, which is estimated to have increased by 50%, and notes that the activities related to environmental sustainability implemented in the city by the different stakeholders are estimated to have risen by 20%.

At the same time, the *Greenest City 2020* programme has prompted a reorganisation of the administration by giving greater importance to the *Sustainability Group*, which has directly reported to the Deputy City Manager since 2009. The cross-sectoral interaction required for the implementation of the planned activities has mobilised and channelled all the municipality's departments towards common objectives and improved communication between them. However, the enthusiasm of the staff, generated by the Mayor and City Council's leadership, and the pursuit of efficiency in resource management

**"The program has grown deeper in the City every week. At first we needed a face, a good brand, a momentum, an inspiration, but now this is just the way we do business, how we deal with waste management, how we deal with water. It would be very difficult to go backwards as the *Greenest City Initiative* has deeply changed the way the city operates."**

Andrea Reimer, City Councillor – City of Vancouver

should be counterbalanced with the lack of investment in additional human resources. This has led to a large overload of work and to former activities being neglected (notably in the Social Department).

### FINANCING THE TRANSITION

While a large part of the programme has been financed by the city's existing resources (Sustainability group's operating budget) and has benefitted from in-kind support from various local stakeholders, the public engagement process and the extensive communication work have come at a substantial cost. This has required external financing, via a EUR 207,000 Federal Government subsidy through the Federation of Canadian Municipalities' Green Municipal Fund. As for the operations set out in the action plan, they are to be financed by the operating budgets of each department in charge of them, following the approval of the City Council. According to Andrea Reimer, "Green is about ef-

ficient use of resources." The project's financial sustainability is guaranteed by working closely with the Financial Department to ensure the feasibility of each activity, combined with these efficiency targets. There is already a visible return on investment from the initiative, since the municipality estimates that investments earmarked for the green sector will reach close to EUR 320m at the end of 2012.

### "THE GREEN ECONOMY": AN ENGINE FOR VANCOUVER'S GROWTH

The *City's Economic Development Strategy* defined in 2011 gives a central role to the green economy (3 to 6% growth per year). The action plan aims at securing Vancouver's international reputation as a "Mecca of green entrepreneurship" by setting the quantified targets of doubling the number of green jobs by 2020 (2010 baseline) and doubling the number of companies actively engaged in a greening process for their activities (2011 baseline).



03 - Neighbourhood Energy Utility

The *Vancouver Economic Commission* (VEC), the municipal agency in charge of the city's economic development, has integrated these two objectives into its internal action strategy and is responsible for defining and overseeing the implementation of the activities related to it. To do so, it has established partnerships with universities, which are tasked with reviewing existing initiatives, presenting the good practices of other cities and establishing recommendations on the strategy and priority activities to be implemented by 2020.

### HIGH-POTENTIAL GREEN SECTORS

According to the VEC, five green industrial sectors have the greatest growth potential: clean technologies, green buildings, materials management and recycling, local food production, sustainable services and education (70% of growth comes from the clean technologies and green buildings sectors).

Among the VEC's strategic activities, substantial support is given to green tech companies sector: the VEC not only guides local businesses by providing advice for international development,



3

### QUESTIONS TO ANDREA REIMER

Chair of Vancouver's planning and Environment Committee and lead councillor on the *Greenest City Action Team*

#### What are the impacts of the *Greenest City Initiative*?

First, a real culture and dynamic of innovation have swept through all the city departments. In the administrative organisation, we have seen a complete decompartmentalisation thanks to closer collaboration, not only between officials, but also between departments.

The external consultants teams have established a dialogue between several departments and sectors: the entire city has benefitted from this – we now know where to find each other to share information, to innovate more. In addition, thanks to the tools involving the public and developed by each programme, the overall dialogue between stakeholders has visibly increased and reached a level that the city had never seen before.

03  
The Neighbourhood Energy Utility (NEU) is the city's first renewable district heating system that recovers heat from untreated wastewater. Finalised in January 2010, it provides heat and hot water to all buildings in Southeast False Creek, including the Olympic Village.

In terms of social impacts, the initiative will create several thousand green jobs, almost 50% of them will be for low-barrier jobs (urban farms, green energy...), which will allow the jobholders to gain skills and social stability. Also, the local food objective and actions will create amazing communities, will bring people together across generations, cultures and social background, which is very important to the city of Vancouver where you have so different profiles and backgrounds. The economic impacts are based on opportunities offered to existing businesses to develop, international companies have come to the city, and there has been a lot of new investment in the green industry since 2009. And we expect that at the end of 2012 we will be close to 400 million dollars (almost EUR 320 m), which is way more than we expected! Finally, the initiative has had an impact at the legislative level because we have adopted about a dozen new laws since 2009. And of course, there are all the environmental impacts: a much higher recycling rate, more

bicycle and public transport users, more local food produced, less waste produced overall, less water used, we have more electric vehicles, car-sharing, etc. We are well ahead from where we thought we would be by now in every single area. But it doesn't mean there aren't still some significant challenges ahead, so let's just not lose sailing until the end!

**How do you situate Vancouver with respect to other cities: competitiveness or solidarity?**

The idea was never to become so literally "the greenest city in the world". It was more a call for action for our own citizens: "Hey, open your mind, imagine what the greenest city could look like, and now imagine that Vancouver could be that!" And it really was a very inspiring dynamic, a focal point around which residents could rally. The "greenest city" can mean several different things depending on the person, but what we can all see is the change that this brings about. Maybe other cities see it as a much harder hedge challenge than we see it... We would love to lose this healthy competition, because

that would mean that other cities are doing better than us: we would all stand to benefit if all cities got greener. We see our green plan as a collaborative goal and we would be really happy if other cities reached and even exceeded the ambitions that we have set ourselves.

**What are the strengths of the programme that can ensure its success?**

I would say there are four elements. The first is leadership: we needed a face, a leader to push the project forward, and the Mayor, Gregor Robertson, fully played this role. The second is a plan: you need an integrated plan with measurable targets. The third is partnership: the city must work with the different local stakeholders. The fourth is action: while it was developing the plan, the city also began to implement activities, otherwise we would have had to wait forever before the plan was finished.

it also supports international companies seeking to establish themselves in Vancouver (2 large companies set up an activity there in 2011 generating some EUR 20m in employment and direct investment for the city, and between 5 and 8 companies are expected in 2012). Other activities aim at supporting the development of local green businesses and promoting innovation: the creation of incubator programmes (technical and financial support) and the development of showcasing activities give these companies the opportunity to have priority in supplying green products to the city through a pre-procurement system. Moreover, two *Green Enterprise Zones* (GEZ), which are a kind of sectoral "green hub" gathering innovative green companies and research institutes, have been created by the VEC. The aim is to build an environment conducive to growth and to attract local and international green companies, as well as skilled labour. A first GEZ is located in the Southeast False Creek neighbourhood, the Olympic village from the 2010 games, which is a model neighbourhood for environmental sustainability; a second is located in the Downtown Eastside neighbourhood, which is a hub of urban problems (poverty, social exclusion, criminality, etc.). According to James Raymond, a researcher at the VEC, "*The aim is to make GEZs the greenest place to work in the world.*"



## THE DYNAMICS OF GREEN INTEGRATION

### GREEN JOBS FOR ALL

Following the implementation of some 40 priority projects between 2011 and 2014, green jobs (integrating a social sustainability criterion) will be created either through existing jobs, but which have *greenified*, or through jobs created in new sectors. Another 10,425 green jobs are expected to be created (against 14,900 jobs in 2010, i.e. 4% of total employment in Vancouver) in 7 sectors (see figure 1). Roughly 45% of the jobs created will be destined for unskilled people who face the most barriers to employment on the

“The leadership of the Mayor and the City Council were essential to motivate the city staff because we had the opportunity to get things done.”

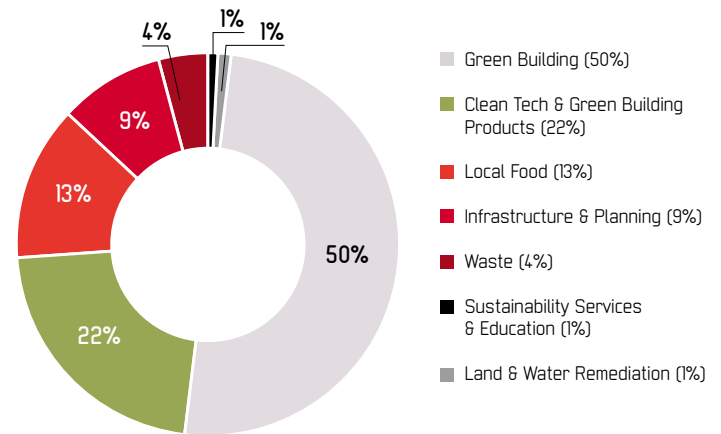
Mary Clare Zak, Social Policy Director  
- City of Vancouver

job market. 15% of the jobs created will be low barrier jobs; 15% will require high school studies and 15% technical studies or training in trades. In 2009, the VEC set up the *Campus City Collaborative* (C3) Programme as part of its strategy to develop local talent and attract and retain human capital. The aim is also to fill green job vacancies that will be created by the development of the green economy (according to the NGO Globe Foundation, Vancouver will experience a shortage of 60,000 skilled workers over the next decade). This partnership between the City of Vancouver and six academic institutes is designed to promote research on the means required to achieve the targets set by the *Greenest City Initiative*, train a skilled and specialized workforce and increase dialogue between universities and the private sector in order to tailor training to demand.

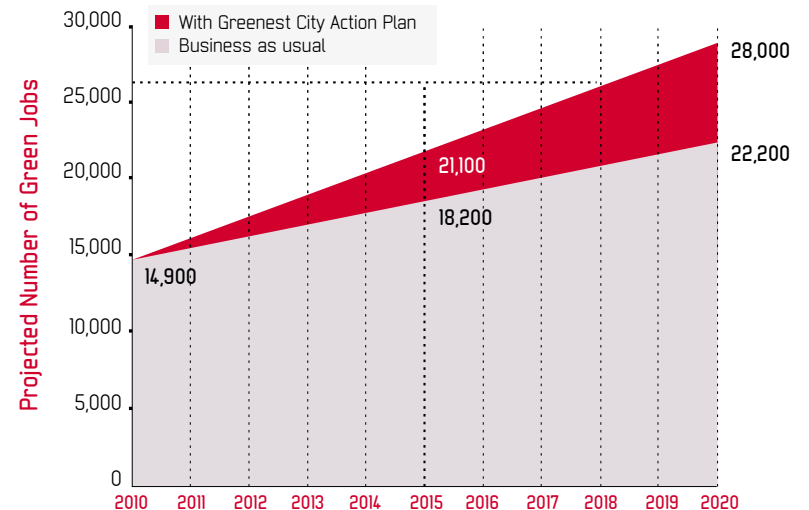
### INCENTIVES TO GREENING LOCAL COMPANIES: PRIVATE STAKEHOLDERS TAKE OWNERSHIP OF THE OBJECTIVE

The VEC promotes clean growth by implementing activities that give incentives to businesses greening their operations. Between 10 and 15% of local companies are actively engaged in a greening process and publicly pledge to measure and improve their carbon footprint and performance relating to energy (fuel, buildings

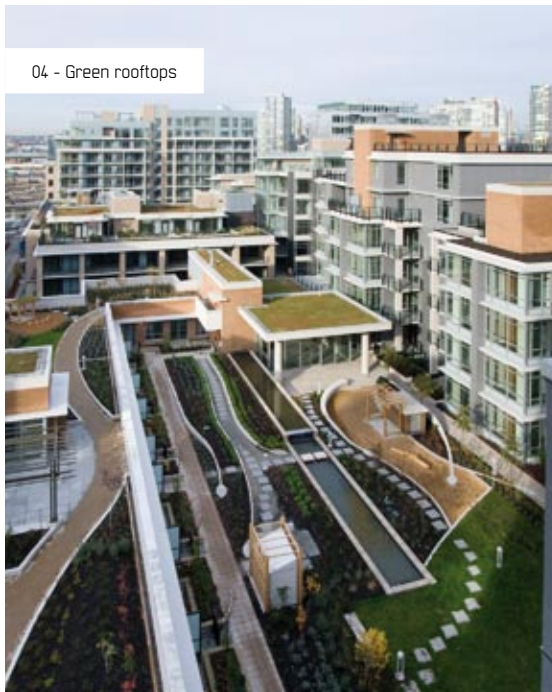
**FIGURE 1 - DISTRIBUTION OF ADDITIONAL GREEN JOBS GENERATED BY 2020, THROUGH GREENEST CITY ACTION PLAN (TOTAL 10,000)**



**FIGURE 2 - FORECAST GREEN JOBS GROWTH**



04 - Green rooftops



04 Green Rooftops of the Olympic Village (False Creek) is an important part of the green building goals. The targets for 2020 are: require all buildings constructed from 2020 onward to be carbon neutral in operations; and reduce energy use and greenhouse gas emissions in existing buildings by 20% compared to 2007 levels.

05 The Greenest City initiative has implemented several actions regarding green transportation. The targets set in the action plan are: make the majority (over 50%) of trips by foot, bicycle, and public transit by 2020 and reduce the average distance driven per resident by 20% compared to 2007 levels. To set the example, the city has included electric cars in its fleet.



05 - Mayor of Vancouver, Gregor Robertson

© City of Vancouver

and travel), water, use of paper and waste. The City is expecting 2,700 more companies to engage in a greening process by 2020 and is setting the example by targeting carbon neutrality for municipal activities by the same deadline (travel, energy, waste management and food supply).

The *Corporate Climate Leader Programme*, in partnership with the Climate Smart organisation, allocates subsidies to companies which are earmarked for technical advice to green their practices and, thus, improve their marketing and increase their market share. In addition, the VEC offers free energy audits to local companies (consumption measurement and identification of ways to reduce consumption) and guides them in their search for subsidies. In order to firmly establish the process in stakeholders' direct environment, the VEC focuses at local level by approaching local businesses and traders' associations.

“A key part of the success of the *Greenest City initiative* was to make the appropriate department manager for goal area accountable to those targets and to have them lead the development of the actions and strategies to reach the targets. Having a clear mandate and adopted targets to meet has been really empowering for staff.”

Amy Fournier, Project Officer, Sustainability Group – City of Vancouver

**VANCOUVER GREEN CAPITAL, THE CITY'S FLAGSHIP BRAND**

Taking advantage of the opportunity provided by the 2010 Winter Olympic Games, which turned Vancouver into a “green showcase” and attracted over EUR 93m of direct investments, and thanks to the leadership of the Mayor, Gregor Robertson, the *Vancouver Green Capital* brand was registered in 2009. It aims to promote

and position Vancouver as the world capital of ecology, a green Silicon Valley and a regional hub for excellence in research and innovation on green technology and the green economy. The VEC aims to strengthen green territorial marketing in the city by supporting and recognising local green companies' development efforts (e.g. restaurants using local food could display the *Vancouver Green Capital* logo), helping the

“Becoming the greenest city is more than an environmental objective: it’s also a savvy economic strategy, for it will offer a competitive advantage in attracting highly mobile investment dollars, businesses, entrepreneurs, and talented workers.”

Excerpt from *Vancouver 2020, a bright green future* – City of Vancouver

city’s Tourism Department develop its communication strategy to increase green tourism and conducting trade missions abroad (notably in Asia) in order to support the development of local companies and attract foreign firms.

The fact that Vancouver was ranked as the third greenest city in the world by *The Economist* in 2011, along with requests for advice from large cities abroad, show that the city is firmly on the green map and that its territorial marketing has been a complete success, thus ensuring its attractiveness.

### **SOCIAL SUSTAINABILITY... STILL AN ISSUE**

While economic growth and environmental sustainability are the focus of the action plan, this does not prevent the social dimension from being taken into account. Although 45% of the green jobs created will be destined for people facing employment barriers, a number of other activities plan, for example, to contribute to the integration of Downtown Eastside, a sensitive neighbourhood of the city.

Socially oriented activities, such as local food production (via community gardens, hanging gardens, neighbourhood coalitions, etc.) will create green jobs which require little qualification and

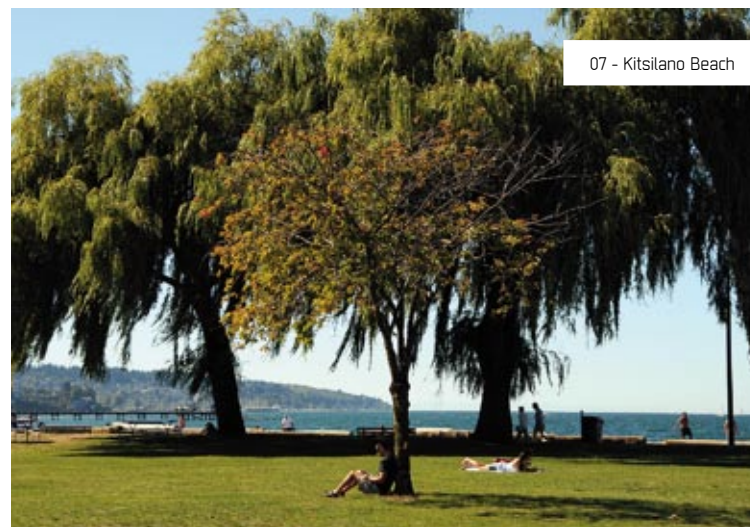
will strengthen social ties by increasing interaction between generations and different social classes.

The actions of the social enterprise EMBERS (*Eastside Movement for Business and Economic Renewal Society*) and its *Green Renovations Programme* launched in September 2010, show how local stakeholders have integrated the green action plan into their activities. Thanks to EUR 120,000 of financial support from the city, EMBERS Green Renovations plans to train unskilled workers from Downtown Eastside and refurbish 5,000 housing units from now until 2020 by offering building weatherisation services (energy efficiency reducing air leakage by between 15 and 20%).

However, according to Mary Clare Zak, Director of the city’s Social Affairs Department and Jennie Moore from the *British Columbia Institute of Technology*, it is still difficult to take the social dimension fully into account in the development of green programmes defined like the *Greenest City Action Plan* was at the outset. In the future, more in-depth examination of the social aspects should include issues such as access to housing or the integration into the city of vulnerable populations other than those in Downtown Eastside.



06 - The Burrard Bridge



07 - Kitsilano Beach

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© City of Vancouver

06  
The 7<sup>th</sup> goal of the Greenest City is to achieve a one-planet ecological footprint. The target is to reduce Vancouver's ecological footprint by 33% compared to 2006 levels.

07  
92% of city residents live within a five-minute walk of a park or green space. The targets of the Greenest City are to reach 100% for proximity to green spaces and to plant 150,000 new trees by 2020.

## PROMISING RESULTS FOR A SUSTAINABILITY AMBITION

*Greenest City 2020* is a city project characterised by major long-term planning and structuring work based on the unifying theme of environmental sustainability, which is promoted as a driver for economic growth and green wealth creation. The proactive political management of this new approach has generated real enthusiasm on the part of city staff, who saw in the Mayor and City Council's leadership the possibility to (inter)act rapidly. Although it will not be possible to achieve all the objectives by 2020, the development of an ambitious integrated action plan, with quantified and measurable targets, gives hope that horizontal interaction between departments and sectors will be permanently established. It has also mobilised and channelled the interests of local stakeholders around common and appropriated goals.

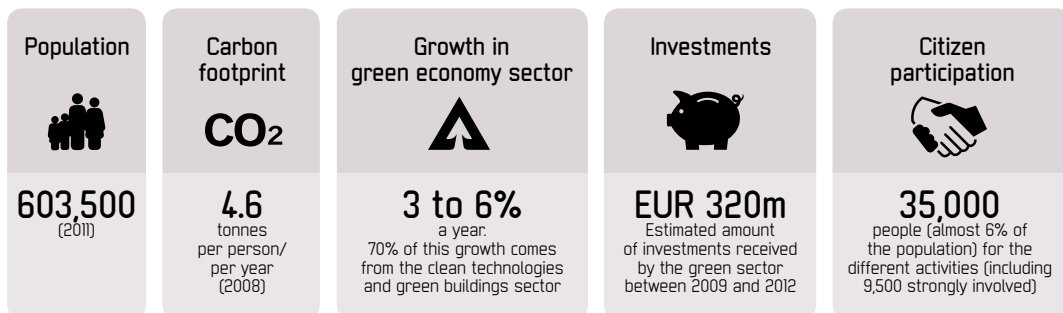
Three years after the launch of the initiative and one year after the adoption of the action plan, a number of operations have solidified political determination, which has been displayed notably through the adoption of dozens of legislative reforms and the reorganisation of the city administration.

It is already possible to measure environmental impacts (progress can be seen at all levels), social impacts (low-skilled jobs, integration of an enclave neighbourhood, neighbourhood associations strengthened) and economic and financial impacts (green jobs created, local and international companies supported, foreign investment attracted, green city marketing). In addition to the improvement in the environmental quality of life of residents, the economic and social dimensions integrated into the strategy would appear to underpin a green revolution in urban development practices shared by local stakeholders.

However, in view of the complexity of the issues and challenges of *Greenest City 2020*, more resources should be allocated to the human resources required to lead and oversee the activities which are launched, as well as to the social dimension of the programme. Otherwise there is a risk that the dynamics and inclusive process will run out of steam or be weakened. To ensure the success of the initiative, the city will need to invest more directly in social sustainability, the cornerstone of the development of a city, and in the future, the action plan must be conceived as a sustainable development plan and no longer just as a green plan.

This will make it a total success. ●

## KEY FIGURES



# TOWARDS A LOW FOOTPRINT FOR A MORE RESILIENT AND ATTRACTIVE TERRITORY

GRAND LYON (FRANCE)  
MONTERIA (COLOMBIA)

The causes and effects of environmental, economic, health and social risks incurred by territories require an increasingly high technical level of understanding, analysis and responses on the part of public decision-makers and local administrations. The City of Monteria in Colombia (403,280 inhabitants for 3,142 km<sup>2</sup>) and the Urban Community of Grand Lyon in France (1.2 million inhabitants for 527 km<sup>2</sup>) have decided to build a partnership with private sector stakeholders, which have the skills and experience to provide expert solutions to the challenges that future changes pose for local authorities.

The calculation of the carbon footprint, which has led to the definition of a Climate Plan (Monteria), and the innovative implementation of the calculation of a territory's environmental footprint (Grand Lyon) are two examples today of a forward-looking and innovative approach which local authorities and elected officials are required to take. This gives them all the necessary keys and allows them to make informed decisions for the planning and sustainable development of their territories over time.

03







“The main difficulty for local authorities such as Grand Lyon, which are seeking to build their territorial development scenario, is that most of the tools of the past are ineffective. Grand Lyon therefore has to innovate to maintain a high level of development.”

Bruno Charles, Vice-President in charge of sustainable development – Grand Lyon

04

01 - Grand Lyon – a territory with outreach.



# 03

## GRAND LYON (FRANCE)

### A FORWARD-LOOKING AND INNOVATIVE APPROACH, AT THE HEART OF THE TERRITORIAL PROJECT

The Urban Community of Grand Lyon comprises 58 municipalities and 1.2 million inhabitants over an area of 527 km<sup>2</sup>. It is recognised for its national and international economic and cultural outreach, the quality of living conditions that it offers and for its firm commitment to sustainable development.

Its 2012 budget stood at EUR 1.94bn and is devoted to competences that are both varied and complementary (road network, drinking water distribution and treatment, waste, transport, definition of urban planning documents, housing and social housing, major city facilities and economic development plans for the territory).

A territorial label, "Only Lyon", promotes its economic dynamism and international reputation, catalysing its ability to be noticed by decision-makers and investors, who are particularly interested in joining the recognised thematic competitiveness hubs (cleantech, life sciences, etc.) of a city with high service sector density.

01  
Heading:  
a territorial hub of opportunities, Grand Lyon enhances its attractiveness via major structural urban projects by placing emphasis on the sustainable dimension of its developments. This economic dynamism focuses on innovation and its international openness.

02  
Large-scale redevelopment, the major Lyon Confluence urban project has been entirely designed with sustainable development in mind: 23% of social housing units, High Environmental Quality requirements for buildings and public spaces and the development of soft modes of transport.



02 - "Confluence" area in Lyon

© Jacques Léone / Grand Lyon

Grand Lyon maintains its level of attractiveness by constantly innovating, particularly with its policy for major sustainable and structuring urban projects, which transform its territory into a city that is both polycentric and compact. The Community is also, as part of the implementation of its local Agenda 21, working to organise its ecological and social transition in order to build its resilience to climate change and its impacts on the city. It does so by actively communicating and by seeking the most appropriate instruments to bring together local stakeholders

(economic agents, academics and institutions, associations, elected officials and citizens) to support the sustainable territorial project it has defined.

### THE ECOLOGICAL FOOTPRINT: AN INITIAL ASSESSMENT

In line with this objective, back in 2003, Grand Lyon calculated its ecological footprint<sup>1</sup>, an environmental communication and educational tool *par excellence*, which completes the sectoral vision provided by thematic environmental indi-



**FIGURE 1 – A NEW TERRITORIAL APPROACH VIA ITS ENVIRONMENTAL FOOTPRINT**

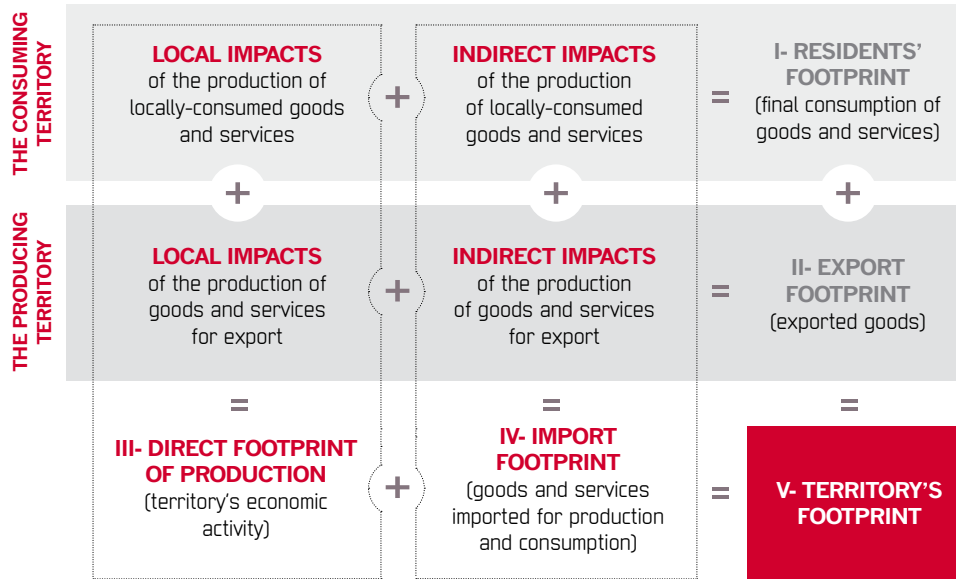
I- Compares the **environmental intensity of consumption patterns** (compared to a neighbouring territory, an American, a Chinese person, etc.).

II- Assesses the **environmental effectiveness of the territory** considered as a **producer** of goods.

III- Assesses the **destruction of local natural capital** and the quality of the local environment ("green" GDP, new wealth indicators, etc.).

IV- Assesses the **territory's dependence** on related territories: the environmental impacts that allow the territory to live are generated in other territories (e.g. China, a production machine for Europe).

V- The territory's **real "environmental balance"**.



caters. The result (4.9 ha per capita per year) turned out to be lower than the national average (5.26 ha per capita per year, 1999 baseline) and made it possible to identify the sectors which contributed most and, therefore, the *ad hoc* policies and activities to be implemented in order to reduce this footprint.

However, while the ecological footprint is an instrument that can conveniently strike the imagination, many aspects still need to be perfected, such as the integration of natural or industrial risks, the impact of human pollution, particularly in aquatic environments, but also in the atmosphere, the impact of water management, or more subjective notions regarding the living environment.

**CARRYING THE ENVIRONMENTAL FOOTPRINT FURTHER: FOR A NEW INTEGRATED TERRITORIAL APPROACH**

The need expressed by territories to be attractive, and to remain so through harmonious economic and social development, requires an overall systemic approach and the use of instruments that are sufficiently powerful to interpret and manage complex interconnected systems (and that put local and global into perspective). It is in this spirit that the Veolia Environnement Group has proposed to the Grand Lyon Urban Community to adopt an innovative forward-looking approach in 2013, included in the "Eco-City – City of Tomorrow" call for projects. This national

call for projects aims to finance and promote demonstration and exemplary projects, which should help change urban habits and practices in order to develop a healthy, low-consumption, adaptable and attractive city. The programme involves using innovative Environmental Footprint indicators, with a wider scope than those of the ecological footprint, based on the Life Cycle Assessment (LCA), but used at the level of the territory. The optimisation of this Environmental Footprint therefore directly contributes to the economic viability and quality of life in the territory, which guarantee its attractiveness and its eco-social competitiveness.

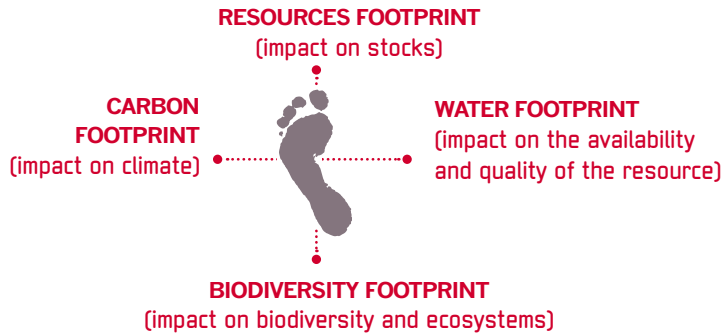
The objective of this multi-criteria tool is to inform decision-making by providing the most accurate possible picture, in an iterative manner, of the activities generated by local stakeholders and their environmental impacts at the local and global level (see Figure 1). The territory is subsequently clearly defined as a consumer on the one hand, and a producer on the other hand. The calculation of the territory's environmental footprint is also developed using open source methods, which are therefore available to all, and allows everyone to take ownership of them and to perfect them.

**THE FOUR FOOTPRINTS DEVELOPED BY VEOLIA ENVIRONNEMENT**

The Carbon Footprint measures an activity's contribution to increasing (or reducing) Greenhouse Gas (GHG) concentration in the atmosphere (using the "GHG balance" method). The Water Footprint measures an activity's impact on the availability of freshwater resources using the Water Impact Index (WIIX). A water re-

<sup>1</sup> The ecological footprint is the land area required for a human population to ensure its way of life and consumption: eating habits, housing, travel, production and provision of goods and services. It is a synthetic indicator of the supply/demand ratio for land resources of biological origin (food, fossil fuels, materials...).

**FIGURE 2 - ENVIRONMENTAL FOOTPRINT**



source is considered to be less available if its volume and/or its quality are reduced by the activity in question, especially if this resource is already in a situation of major water stress (i.e. when the quantities used are close to the available quantities).

The Resources Footprint assesses an activity's (beneficial or negative) impacts on the availability of resources (minerals, fossil fuel resources, wood and arable land): negative impacts via the consumption of resources or, on the contrary, positive impacts via recycling, which makes the resource available for a new use. The aim of this indicator is to give a proportional valuation of any decision that contributes to preserving the availability of resources for other current human uses and for future generations. It also estimates the risk of the activity in question *vis-à-vis* the use of these resources.

The Biodiversity Footprint measures an activity's impacts on the deterioration of ecosystems (ecotoxicity, acidification, eutrophication and land use). This indicator also values any decision that

contributes to preserving the health and quality of ecosystems, which ensure that the services they render to the community are maintained. The methodologies used to calculate these footprints have been developed using state of the art of the international scientific analytical research on life cycles and environmental databases.

Each footprint taken individually is not "exhaustive" as it does not cover all the possible impacts on the area that needs protecting. However, the combined use of the 4 footprints covers a maximum number of impacts and offers, in echo to the territory's strategies, a multi-dimensional assessment of their economic and environmental – and therefore societal – impacts.

**A NEW COMPASS FOR A CHANGE OF COURSE**

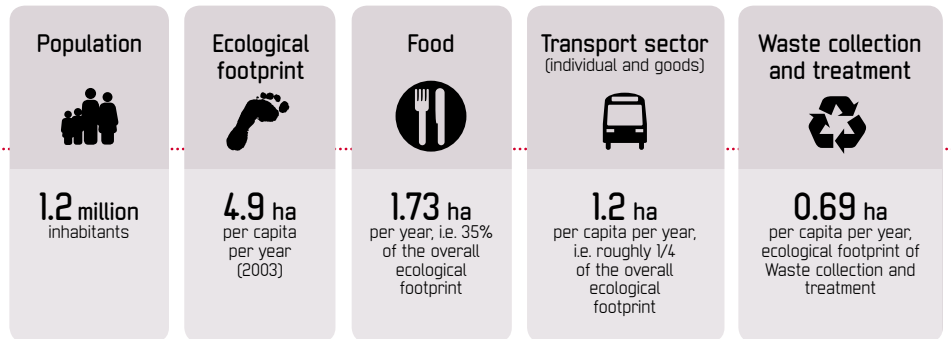
The environmental footprint covers a broad range of environmental issues and makes their linkages with economic and social issues visi-

ble and tangible for decision-makers and their teams. Indeed, under an urban development policy, the only way to make informed decisions and avoid possible "pollution transfers" (or transfers of damage between the environmental areas to be protected) is to holistically take account of all the environmental impacts.

This "360-degree" calculation aims to mobilise – but in the same direction – territorial stakeholders, which have both a common goal and individual interests, for the benefit of the majority.

The environmental footprint above all provides a broader vision of the environmental impact of an industry, product or territorial project in its entirety. This allows local stakeholders to build alternative scenarios able to guide their future toward the most effective sustainable solution, recommended by national and international climate change frameworks. "The competence of knowledge" makes it possible to define unprecedented eco-social opportunities for stakeholders and territories.

**KEY FIGURES**



# 04

## MONTERIA (COLOMBIA)

### A COMMON DYNAMIC TO REDUCE CARBON IN THE TERRITORY

By signing the Global Cities Covenant on Climate, the so-called "Mexico City Pact", in November 2010, Monteria officially became a fully-fledged member of the international group of territorial authorities leading the fight against climate change.

The city, faced with the obligation to take account of urgent issues and meet residents' needs, engaged in a process to adopt the most effective sustainable solution. The aim is to guide the next ten years of its history toward a momentum of balanced and innovative growth that respects the environment, reduces its carbon emissions and, at the same time, ensures the quality of life for Monterians.

#### A PARTNERSHIP FOR AN ENHANCED EXPERTISE AND POLICY

For 10 years now, the municipality has been under contract with Proactiva Medio Ambiente, a subsidiary of the Veolia Environnement and FCC groups, for the management of its water and sanitation services. It has decided to innovate by becoming the first Colombian city to calculate its carbon footprint<sup>2</sup>, on the basis of the know-how of its private partner. The latter was already conducting this environmental accountability within the scope of its delegated activities.

03  
Using the calculation of its carbon footprint and the definition of its Climate Plan, Monteria is building its technical and policy skills by pooling local energies, but also national and international resources, for a common "greener" future.



03 - 10 years to become a "green city"

There was a twofold interest for the city to have a "carbon mapping" of its territory and its different activities:

- on the one hand, to identify the link between its resources and its expenditure and take better account of the risks and opportunities, particularly regarding ongoing activities,
- and on the other hand, to guide its sustainable development policy and take stock of this carbon mapping, and the resulting policy, via the "Monteria Green City 2019" Climate Plan during its definition and adoption.

For Proactiva Medio Ambiente, this successful pilot experiment has created strong added value for the local authority and enriched its partnership with the city. It heralds a new offer to support local authorities, directly linked with the

economic and social development of the territory, which necessarily requires an informed management of its environmental footprint.

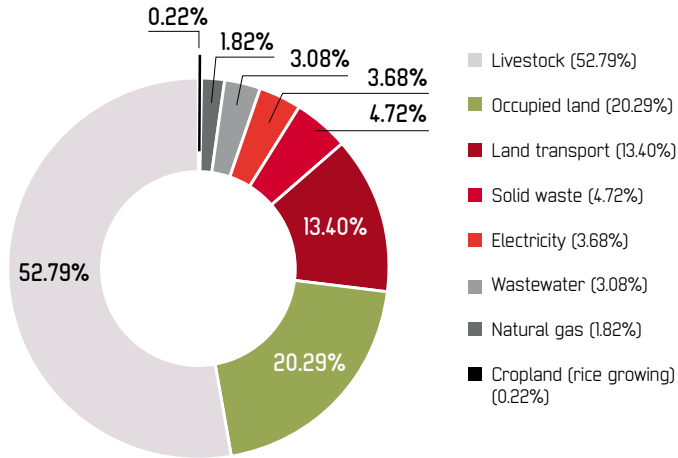
This public-private partnership has allowed each party to enhance its social and environmental responsibility as a local stakeholder in applied sustainable development. This is fully in line with Colombia's national commitments, which are based on the reports and recommendations of the Intergovernmental Panel on Climate Change (IPCC).

#### A FAVOURABLE CONTEXT FOR CHANGE

Several core elements have ensured the success of the process initiated by Marcos Daniel Pineda Garcia, the Mayor of the city until early 2012 and at the origin of this sustainable change.

<sup>2</sup> The carbon footprint calculates the quantity of carbon (generally in tonnes) emitted by an activity, organisation or territory.

**FIGURE 3 – NET EMISSIONS OF CO<sub>2</sub> EQUIVALENT BY SUB-SECTOR**



He was 33 at the time of the launch of the calculation of the territory's carbon footprint, and was initially one of the new generation of elected officials aware of the climate challenges posed by local development, and the related opportunities.

His successor, Carlos Eduardo Correa Escaf (from the same party and aged 38 at the time), subsequently ensured political continuity. In 2012, he took up the torch of a policy called *Progress for All*, which is based on the responsible integration of the environmental and social dimensions of the city's sustainable development strategy.

Finally, the close cooperation with Proactiva was based on an active and cross-cutting working group gathering city officials and technicians from the company, brought together on the initiative of the first Mayor and led by the elected official himself.

<sup>3</sup> The ideal (equitable) value of the carbon footprint is 13 t<sub>eq</sub>CO<sub>2</sub> per capita per year. It is the result of the research of the Intergovernmental Panel on Climate Change (IPCC).



**3**

**QUESTIONS TO CARLOS EDUARDO CORREA**

Mayor of Monteria, Colombia

**What benefits do you expect from the implementation of the Climate Change Plan "Monteria, Green City 2019"?**

On the economic front, in the short term we hope to see an effective improvement in urban services, a reduction in energy consumption and a change of practices in the entrepreneurial and agricultural sectors. In the medium term, our aim, in line with the "green city" model promoted in our Climate Change Plan, is to develop tourism and service activities, which would attract new entrepreneurs, investments and jobs. On the social front, we have planned concrete actions to meet the needs of the most vulnerable part of the community, in particular a social housing plan to re-house in risk-free areas, and the expansion of drinking water and sanitation services in both peri-urban and rural areas.

**Has the integration of the carbon footprint and Climate Change Plan had an influence on the way you act and think within the city administration?**

Just a few years ago, any talk of climate change in Monteria was a utopian fantasy reserved for the likes of researchers or people already aware of environmental issues. The project has allowed us to bring about a real change in the mindsets

of the community, starting with the city administration itself. From then on, the different social stakeholders began to actively take ownership of the issue and dedicated spaces were created for dialogue among citizens, which gradually moved from discussion to action. Some communities and associations even spontaneously offered to work as volunteers for the implementation of the objectives set out in the Plan.

**What visibility have these programmes given to the city ?**

In Colombia, the urban management of climate change is a relatively new topic. In fact, Monteria was the first city in the country to make an inventory of its greenhouse gas emissions and present a comprehensive climate change action plan, making us a reference in terms of sustainability for the other regions in the country. We have been invited by the Colombian Ministry of Environment and Sustainable Development to share our experience during national events. At the international level, the city is a signatory to the Mexico Pact on Climate and records its management results in the Cities Climate Registry. We recently participated in various events on the sidelines of the Rio+20 Summit, with the aim of presenting our Plan and getting the message across that it is possible to take action for sustainable development in emerging Latin American cities.

## THE GROWING IMPORTANCE OF SUSTAINABLE AND STRATEGIC TERRITORIAL PLANNING

This strong political leadership has been combined with regular meetings between Proactiva's technical teams and those of each city department and service. The aim was to explain the approach, disseminate technical documents and obtain the information required for the introduction of the calculation of the territory's carbon footprint and the definition of the Climate Plan. These internal meetings at the municipality were completed with public meetings with residents led by the Mayor. There were also consultations with the main stakeholders in the territory, notably the university (on reforestation and carbon neutrality), companies in the different sectors (notably energy), and the city's associations of farmers and architects. At the national level, the cities network reflecting on the national strategy for climate change adaptation and the Ministry of the Environment and Sustainable Development were also consulted.

The report on Monteria's carbon footprint was published in May 2011 after 5 months of joint technical work. It concluded that the carbon footprint (2009 baseline) stood at 1.24 million tEqCO<sub>2</sub>, with over 73% from the agricultural sector – AFOLU (livestock alone accounting for over half of total CO<sub>2</sub> emissions). Per capita emissions stood at 3.07 tEqCO<sub>2</sub>.<sup>3</sup>

The result of this initial carbon calculation determined both the main sources of greenhouse gas emissions in the municipality and the vulnerabilities to which the city is exposed. It also highlighted possible areas of action to meet sustainable development needs and draw on the expertise of local stakeholders.

They were included in the Climate Plan and made it possible to identify 15 challenges trans-

lated into 26 costed flagship actions, embodied by a strong political will aiming to transform Monteria into a "green city by 2019". The Plan was published in August 2011 and sets out to consolidate equitable urban policies, scale up the deployment of the municipality's physical infrastructure, enhance the availability of public spaces and promote a civic culture.

The use of clean technologies, the efficient management of public services, the orientation of the city's development towards a "low-carbon economy", the promotion of changes in behaviour and habits and the use of financial resources from carbon finance and green funds are all vehicles for reducing GHG emissions by 20% by 2019.

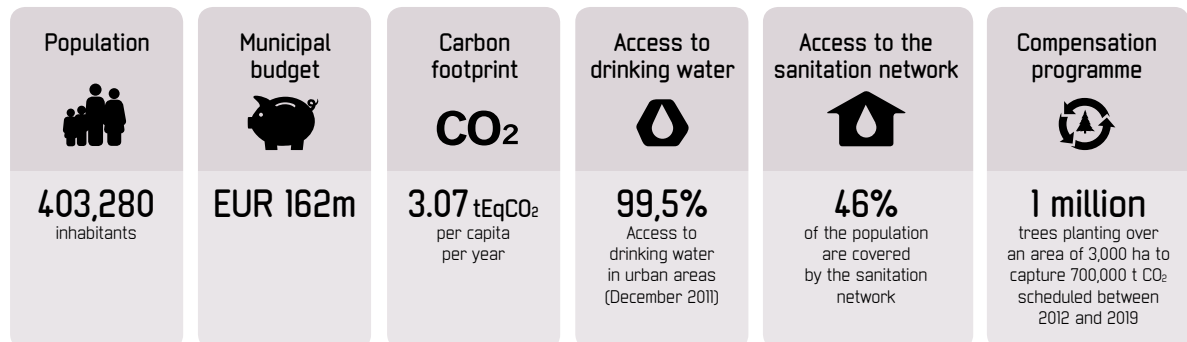
The municipality, which is engaged in a collaborative exchange with a long-term partner company – leader in environmental services on the continent – has gained regional and national recognition thanks to this proactive approach. This today allows it to consider integrating mitigation, adaptation, compensation and awareness-raising programmes in close connection with its

“For local elected officials, investing in the field of environmental sustainability provides an opportunity to innovate in the city's management, gain public support and have privileged access to funds to finance the implementation of large-scale investments for the territory.”

Janis Rey Lozada, Project Manager  
– Proactiva Medio Ambiente

territorial development plan. It now has a more developed argument on its attractiveness and competitiveness, able to convince potential investors and influence the strategic technological decisions that need to be made, in order to restructure its resource-consuming and productive activities in the territory. ●

## KEY FIGURES





01  
In order to become the greenest city in Europe, the municipality wants at the same time to develop its natural environment, its services to the community and, especially, the construction of sustainable housing.

# ECOBUDGET: RECOUNTING THE ENVIRONMENT DIFFERENTLY

TUBIGON (PHILIPPINES)  
VÄXJÖ (SWEDEN)

Two cities, Tubigon in the Philippines, with 41,600 inhabitants, and Växjö in Sweden, with 83,000 inhabitants – both on opposite sides of the world – are exploring the opportunities offered by the same tool: EcoBUDGET, a systematic environmental management tool created by ICLEI – local governments for sustainability Network in early 90's.

Two contexts, two ways of thinking and acting based on a common concern to enhance the environmental capital, and sustainably preserve it, by integrating its contribution to the collective wealth into the budget: on the one hand in Tubigon, in an environment of poverty and vulnerability, which are closely linked, and on the other hand, in Växjö, in a quest for sustainable performance.

Or when cooperation between cities, on two completely different sides of the world, gives rise to the commitment to integrated sustainability, as “what is not recounted ends up not counting any more”.





06

“All aspects of our operations shall be run and developed with major consideration to the conditions that the environment and the local and global natural resources provide. This is to ensure that future generations inherit a healthy and good environment.”

Excerpt from *the Environmental Programme* – City of Växjö



## TUBIGON (PHILIPPINES)

### SOCIAL INEQUALITIES, ECOLOGICAL INEQUALITIES: BRIDGING THE DIVIDE OF A DOUBLE JEOPARDY

Tubigon (41,600 inhabitants for 81 km<sup>2</sup>), a municipality in Bohol Province in the Philippines, divided into 34 Barangays (decentralised units, each headed by a leader) manages a 2012/13 budget

of roughly EUR 2.2m. The average monthly per capita income stands at roughly EUR 188.





The viability of its economy mainly relies on activities related to exploiting available natural resources (fishing, agriculture, livestock raising, wood, tourism...) on which the population is largely dependent. However, this ecological capital faces a number of threats (soil erosion, water pollution, forest cover loss...), which directly affect the living conditions of the poor and their ability to make a sustainable livelihood from it.

Against this background, in 2005 the municipality adopted the EcoBUDGET framework instrument designed by the ICLEI network which,

as a system to manage local natural resource consumption, is able to inform the city's strategies and objectives for its development. The aim is to reduce the vulnerability of a section of the population and improve both its standard of living and access to basic urban services. By defining the impact of existing public environmental initiatives, this "environmental budget" facilitates their monitoring and evaluation (qualitative and quantitative indicators) and, especially, ensures that they are integrated into the city's annual budget.

Two examples of the direct impacts of the implementation of EcoBUDGET: the mangroves (marine marshland ecosystem), an essential resource for the resilience of local natural environments, and therefore of communities, have been protected against intensive exploitation. Similarly, drinking water resources, the poor quality of which was becoming harmful to residents, have improved markedly.

FIGURE 1 – ECOBUDGET

Ressources and Indicators	Baseline value (2008)	Value 2011	Short-term target (2012)	Long-term target (2015)	Evaluation
<b>DRINKING WATER</b>					
Number of sources positive of coliform (number of municipal sources tested negative)	5 out of 12 sources tested negative	6 out of 10 sources tested negative	13 out of 13 sources tested negative	All sources tested negative	60% 
Non revenue water, system lost (%)	52,32%	38,34%	30%	20%	73% 
Turbidity (concentration of suspended solids in Nephelometric Turbidity Unit)	6 municipal waterworks don't meet DOH standard (NTU)	10 out of 12	all sources meet DOH standard (NTU)	100% of municipal waterworks meet DOH standard	83% 
<b>FOREST COVER (COASTAL ZONE)</b>					
Area covered or reforested (Ha)	556,75 Ha	602,75 Ha	No data	600 Ha	100% 

#### ECOBUDGET, HOW IT WORKS

Through EcoBUDGET, the environment is perceived as a capital to be preserved, but especially – to achieve this – to be enhanced. The tool identifies environmental problems (for example, poor water quality) and the resources involved (in this case, drinking water) for which the introduction of indicators (percentage of contaminated sources) will allow its improvement to be monitored.

Action plans are defined to improve the quality of natural resources (monitoring of water sources, construction of dams...) and are allocated an annual budget. Environmental resources are

not directly translated into monetary value: it is the projects resulting from the diagnostic and appraisal conducted thanks to the indicators which are included in the annual budgets of the relevant departments.

The EcoBUDGET cycle takes place in 5 phases:

- The City of Tubigon takes stock of the 6 resources (drinking water, irrigation water, forest cover, fruit trees, coral reef and the built environment) selected to be included in the MasterBudget, the name given to the environmental accounting system. This investigation phase first assesses the quality and availability of resources and, second, the ability of stakeholders to implement the actions required to preserve them.
- During the preparation period, the MasterBudget assigns physical and social indicators to each resource that will be subject to a specific action plan.
- The objectives are defined for the short or medium term (2 and 5 years) and are subsequently discussed and approved by the City Council. The Council defines priorities integrating the city's *development Strategy* via its 3-year executive and legislative programme and its *annual investment Plan*.
- The implementation of the MasterBudget is then concretised via actions, determined depending on their impact on the preservation of resources, but also on the communities which are reliant on them.
- A monitoring-evaluation compares the progress made by the programme with the objectives identified, and allows the budget to be re-adjusted accordingly from year to year.

02  
The productivity rate in paddy fields has risen by 11% per ha thanks to enhanced irrigation water management.



02 - More productive paddy fields

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### **A THREE-PRONGED LOCAL RENEWAL MOVEMENT: POOLING OBJECTIVES, MESHING INSTRUMENTS, ADJUSTING THE FOCUS**

EcoBUDGET's integrative approach is conducive to an institutional arrangement that fosters ownership of environmental issues by both the political authorities and the technical departments in charge of the measures to be implemented (agriculture, pumping stations, urban planning and development). The action plans are adopted by the City Council, meaning these commitments are brought to the highest decision-making level.

The Technical Working Group (TWG), the programme's technical backbone comprising 9 tech-

“EcoBUDGET allows decision-makers to obtain first-hand information on the situation of the initiatives implemented with regard to the objectives defined by the technical teams. It also helps to improve the allocation of financial resources to support environmental initiatives.”

**Noel Mendana**, Coordinator of the Municipal Planning and Development Office – Municipality of Tubigon

“EcoBUDGET is a comprehensive tool able to coordinate the city’s strategic vision, programmes, the allocation of resources and an effective measurement system.”

*EcoBUDGET* document – ICLEI

nicians from the municipality and the directors of the relevant departments, prepares, implements and evaluates the MasterBudget. In doing so, it maintains a continuous and horizontal dialogue between stakeholders. The preparation phase leads to a discussion at the City Development Council, the decision-making entity which gathers elected officials, technicians, NGOs and other civil society representatives. Once it has been adopted, the MasterBudget is made public and disseminated via the local newspaper.

For its part, the Poverty Database Monitoring System (PDMS), established under the Development Resources and Access to Municipal Services (DReAMS) programme supported by the European Union, was adopted in 2010 by the Bohol Province Urban Planning and Development Department and the Bohol Local Development Foundation. This database comprising 19 indicators (malnutrition and infant mortality, diseases, electricity, waste system, housing, water, sanitation, unemployment...) identifies the levels of deprivation and subsequently determines the sectors requiring priority poverty reduction measures.

The TWG has therefore intuitively used the PDMS to assess the poverty status of the communities targeted by the actions conducted under the environmental MasterBudget. By com-

binning these two decision-making instruments, the innovative coordination and interoperability of the diagnostics, and of the programmes to be implemented as a result, provide both the authorities and local stakeholders with a “relief” picture – as it is multidimensional – of the realities at work in the city area. They can thereby refine, for the future, the vision of the resilient development of the community and the corresponding choices. This is how the action plan on drinking water resources, directly related to the fight against infant mortality, has succeeded in reducing the proportion of households without access to drinking water (9.68% in 2011 against 12.15% in 2007).

Tubigon’s local authorities eventually aim to directly integrate the EcoBUDGET indicators into the PDMS database in order to more clearly establish the correlation between natural resource protection and poverty reduction, thereby adopting a “dual target and impact approach” to its policy for strategic operations.

### **THE SYMBOLIC STORY OF AN UPTURN IN LIVING CONDITIONS**

Environmental protection is today a priority for Tubigon’s development agenda.

This success, linked to the formalisation, integration and appropriation of the process, lies in its ability to establish a systemic link between a strategic vision of the city, urban development choices, the allocation of resources, the measurement of their performance and the fight against poverty.

Consequently, the 2012 MasterBudget shows that the municipality has achieved most of its short-term objectives, demonstrating that it is well on track for the medium and long term.

For example, the number of de-polluted sources rose from 5 in 2008 to 6 in 2011 and the per-

centage of illegal withdrawals fell from 52.32% in 2008 to 38.34% in 2011. Concerning irrigation water, 16 diversion dams have now been built against 7 in 2008. Irrigated farmland area has grown from 245 ha in 2008 to 361 ha in 2011, leading to a 14% productivity increase per hectare. In terms of the preservation of marine habitat, the creation of 10 protection zones has allowed coral cover to return to 50%. The waste collection system has seen its volume of solid waste fall to 60% of household waste with 80% of households now recycling. Beyond the state of natural resources, the EcoBUDGET action plans have thus made a significant improvement to residents’ living conditions. For instance, the 2012 PDMS shows that the portion of households suffering from malnutrition fell from 24.72% in 2007 to 13.58% in 2011, and that the percentage of households using non-potable water sources decreased from 12.15% to 9.68% over the same period.

### **ECOBUDGET, A KEY TO A CULTURE OF COOPERATION**

Local government commitment to the development of its city is crucial to the success of EcoBUDGET, which requires a strong vision that can guarantee investments over the long term. To this end, the creation of the TWG, and the integration of EcoBUDGET into the relevant departments’ working plans, have greatly facilitated its effective and lasting implementation. The commitment of local organisations throughout the process has also been instrumental to the integration of the process over time.

Although the municipality already had a culture of partnership with local stakeholders and civil society, the adoption of the EcoBUDGET has transformed this culture into a local management tool – a real circle of enhanced coope-

## FIGURE 2 - INVESTMENT ITEMS IN THE 2011 ECOBUDGET BASED ON RESOURCE-RELATED PROJECTS

### INFRASTRUCTURE

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#### FOREST COVER RESOURCE

- Supplies and material (nursery): PHP 25,000.00 (EUR 469)
- Procurement of fruit tree seedlings: PHP 200,000 (EUR 3,752)

#### SOLID WASTE SYSTEM

- Improvement in waste containment: PHP 150,000 (EUR 2,813)
- Maintenance of compactor and dump truck: PHP 100,000 (EUR 1,876)
- Procurement of two 6-wheel dump trucks: PHP 150,000 (EUR 13,131)

#### WATER SUPPLY

- Chlorination: PHP 80,000 (EUR 1,501)
- Measurement programme: PHP 477,000.45 (EUR 8,948)
- Rehabilitation of water supply system: PHP 50,000,000 (EUR 937,946)
- Procurement of submersible pumps: PHP 200,000 (EUR 3,752)
- Drilling for new water sources: PHP 150,000 (EUR 2,814)
- Construction of micro-dams: PHP 4,135,000 (EUR 77,568)

### SOFT

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- IEC (information, education, communication): PHP 50,000.00 (EUR 938)
- Implementation of EcoBUDGET projects: PHP 100,000 (EUR 1,876)
- Coastal Resources Management Programme: PHP 250,000 (EUR 4,690)
- Seminars and training: PHP 50,000 (EUR 938)
- Capacity building programme: PHP 10,000 (EUR 188)

3

## QUESTIONS TO WILLIAM R. JAO

Mayor of Tubigon



### How do you integrate the need to take account of environmental issues into Tubigon's Development Strategy?

Environmental sustainability and management are already part of our strategy and development framework. Today, we are seeking appropriate policies and initiatives, i.e. which are socially and morally acceptable, ecologically sustainable and economically viable, in order to create a balance between environmental sustainability and economic development. We use environment management tools (EcoBUDGET system) and other instruments (Poverty Database Monitoring System) which, we feel,

will allow us to define these policies and make the right decisions so that we can achieve the future we aspire to.

### How do you promote the social and economic impacts of EcoBUDGET to residents?

Promoting and "selling" the EcoBUDGET programme and initiatives to our communities is a challenging task for the City of Tubigon. The environmental programmes are a long-term commitment; it takes several years before people can really see the difference and feel the impact. Yet the people who directly depend on the use of natural resources need to work every day to earn a living to feed their families: this is why the regulations and bans are very unpopular in certain groups. From experience, we therefore choose to explain the benefits and impacts of our own programmes and initiatives and to promote best practices in our own system, in order to gain support from the affected communities. The fact of offering alternative solutions and additional economic opportunities to the groups concerned has

proved to be a reliable strategy to ensure social acceptability and support, not only from our target beneficiaries, but also from our partners.

### What changes has the use of the EcoBUDGET made to the way in which you manage and implement the local urban policy?

The integration of action plans, measures and the management of activities and initiatives related to EcoBUDGET into the city services' work plan ensures that funds are allocated for their implementation and, we hope, their sustainability. This also ensures that there is an annual audit, a state of the art review of the achievement of objectives, and thus promotes transparency and accountability. This annual audit using EcoBUDGET tools allows the local authorities to obtain first-hand information on the situation of the environmental programmes and the projects and activities, which ultimately allows them to make "informed decisions".



“The main objective is to sustainably use resources, while maintaining sufficient economic opportunities for our community.”

Noel Mendana – Municipality of Tubigon

ration. For example, the TWG is today working directly with the volunteer community which is replanting trees in the mangroves, and this is being done with the financial and technical support of the department in charge of this component. This volunteer participation is of major benefit to the municipality and guarantees the required ownership of the city's resilience project by residents. Because the challenge for the municipality of Tubigon in its integrated approach lies in striking a balance between environmental protection measures, which are spread out

over a long time span – and poverty reduction measures – which must be implemented in the shorter term: a social contract with residents thus makes it possible to offer them alternative economic opportunities to compensate for the consequences of the ban on exploiting newly protected resources. Training on fishing and material is therefore offered to residents who have notably been deprived of intensively exploiting the mangroves.

The municipality uses local and international partnerships for the allocation of the funds required and capacity building for new techniques. However, it was initially technical cooperation developed with the city of Växjö in Sweden that allowed the authorities to replicate EcoBUDGET in a municipality with a lower investment capacity, which demonstrates its adaptability.

#### MANY CHALLENGES STILL REMAINING

Since 2006, EcoBUDGET has clearly proved its worth in Tubigon where it has allowed the entire

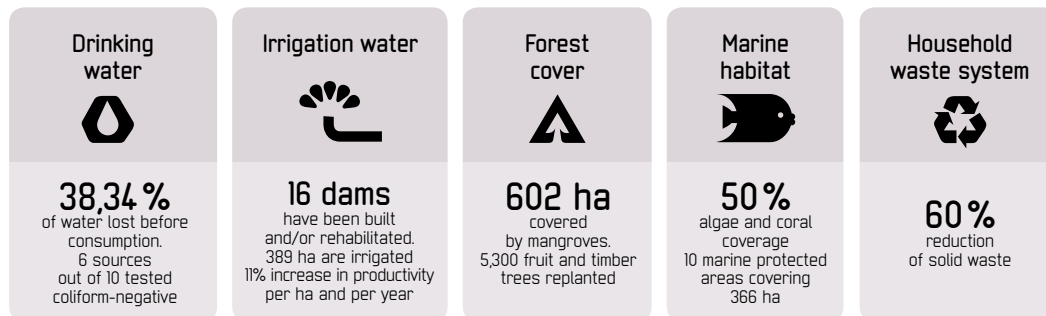
community to lastingly rewrite its history, with its own vocabulary, hence today the interest, supported locally, of enriching it further.

Financing for actions implemented, to achieve the objectives approved in the MasterBudget, today account for between 10 and 15% of the municipality's total expenditure. Each department involved must prepare its budget, including the additional cost of activities related to EcoBUDGET, which benefit from priority financing from the municipality. Additional funds are also allocated to certain costly projects, such as dam constructions, and certain programmes receive support from local and international NGOs.

Consequently, the funds invested in the EcoBUDGET programme rose from EUR 4,220 in 2006 to over EUR 1m in 2011 (EUR 1,054,390 for projects and EUR 8,630 for administration).

However, while the volume of financing dedicated to environmental resources has increased considerably, the municipality does not have the funds required to plan larger-scale actions or to expand preservation to other resources. In addition, this limitation concerns the lack of skills in the municipality to monitor and evaluate certain indicators. The same also holds true for measures on air quality, which cannot be introduced due to the lack of sufficiently qualified staff. The formation of the environmental budget also comes up against the scope of the municipality's legal competence to implement its action plan, with regard to certain resources. During the first year of implementation of EcoBUDGET, the municipality had included extraction materials from quarries as a resource to be preserved. However, it did not manage to influence the protection of these areas which is of national competence.

#### KEY FIGURES



06

## VÄXJÖ (SWEDEN)

### THE GREEN PERFORMANCE

03  
The ambition to become the Greenest City in Europe is the sum of all the environmental measures that have been carried out and shared with Växjö's residents, with the aim of living well together both today and tomorrow.

<sup>1</sup> EcoBUDGET, developed by the ICLEI local government for sustainability network, is a management system for local natural resource consumption, translated in the form of a budget voted by the City Council and integrated into the municipality's general budget or forming a budget in itself parallel to the traditional budget.

In 2003, Växjö adopted EcoBUDGET<sup>1</sup> as an instrument to catalyse and monitor its environmental programme with the stated ambition of becoming the "greenest city in Europe".

A tale of success.

Växjö, a partner of a number of international projects, actively communicates on its green ambition. This massive investment in green territorial marketing has allowed it to innovate in several areas (new green technologies, lower energy consumption...). This was the case with EcoBUDGET, which today has been fully appropriated and which, by the power of its green accounting "story telling", has allowed it to pool local energies and attract international recognition and funding. The technical cooperation initiated with Tubigon in 2005 (exchange of practices on EcoBUDGET) reflects this ability to have "green outreach" beyond its borders.



03 - Living the sustainable city

#### A TOOL TO SHARE THE GREEN AMBITION

Växjö's environmental management system is made up of two types of so-called "monitoring" and "budget" indicators. Only the budget indicators are integrated into EcoBUDGET (lack of statistical data in the city for the monitoring indicators, the objectives of which are, however, set out as priorities in the budget. Other objectives concern environmental resources, which are considered as measurable and can therefore be subject to annual budgeting).

The municipality has ten budget indicators for this purpose (e.g. the proportion of organic food consumption and the number of public transport journeys per person), included in the "traditional" annual budget during its preparatory pha-

**"In Sweden, the municipalities have more ambitious objectives than the government and they have sufficient power to change things."**

Bo Frank, Mayor of Växjö

se. However, in this case, it concerns items for which are assessed environmental resources. Together they form a single document approved each year by the City Council. Each department is responsible for the objectives to be achieved via budget indicators and must integrate them into its action plan and annual budget. Every 6 months, the administration reports on the environmental budget to the City Council, which assesses the results shown by the indicators in the light of the stated objectives and makes the appropriate decisions in terms of readjusting or strengthening the policy. Through this accounting process, the decision-making tool therefore gives full visibility to the economic and social impacts of the environmental policy conducted by the local authority. Moreover, the municipality is today moving towards further integration of EcoBUDGET, whereby financial and environmental objectives are put in a mirror in budget discussions.

**ENVIRONMENTAL RESOURCES, A FACTOR STILL DIFFICULT TO “RECOUNT”**

However, Växjö’s experience illustrates the difficulties in creating indicators that are sufficiently relevant to accurately reflect the impacts of the environmental initiatives implemented by the municipality (appreciable translation of the improvements that can be directly linked to the projects implemented, technical teams able to make the relevant measurements to produce reliable statistics on which to base arguments for the actions to be recommended). Consequently, the municipality preferred to reduce its number of budget indicators by selecting those for which it has sufficient measurement capacity (annual statistics) and for

- 04 Having reduced its CO<sub>2</sub> emissions by 35% since 1993, Växjö aims to operate without fossil fuels by 2030, especially through its public transport policy.
- 05 Foresters sell their waste to the municipality to supply the Sandvik biomass power plant, which produces almost 200 gigawatt hours (GWh) of electricity a year, i.e. almost 50% of Växjö’s demand.



© City of Växjö

“The central idea is to protect, invest and use human, natural and economic resources appropriately.”

Excerpt from the *Environmental Programme* – City of Växjö

which it can control the trends. In this case, practice shows the extent to which it is complicated to want to “count the environment” in order to subsequently “recount” it better, and provide support to politicians and citizens for the definition of the city’s strategic objectives, with regard to the challenges of preserving and rationally exploiting resources. The indicators selected are sometimes not sufficient to calculate the existing economic benefit from an investment to reduce CO<sub>2</sub> emissions or the

increase in green spaces, which is why Växjö sought to add an “income” column to its environmental budget. The purpose was to compare the cost of renovating a house, to make it more energy efficient, to the money saved on energy expenditure. This column was deleted as it was too complicated to fill in (difficulty to assess the added value generated by certain environmental initiatives). In this sense, the city’s next forward-looking approaches should be closely followed... because EcoBUDGET may not be the





© City of Växjö

05 - A forest industry with multiple benefits

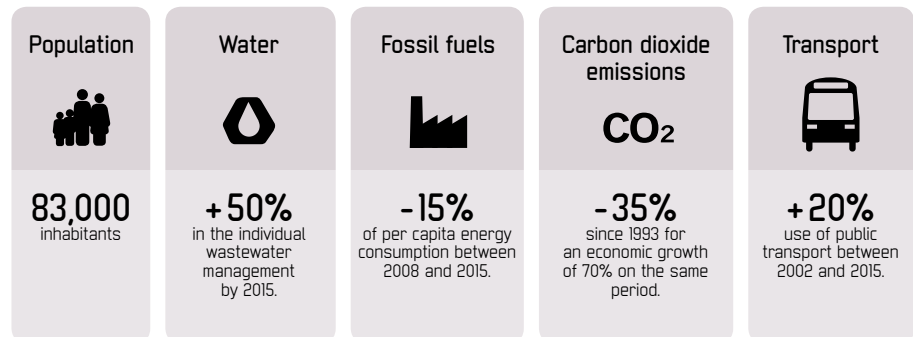
“The integration of monetary and environmental budgets by using EcoBUDGET has given environmental measures and initiatives a higher status and resulted in greater environmental awareness and commitment in the organisation. A strong vision, ambitious targets and a regular follow up mechanism of environmental statistics is a must when trying to build a sustainable society.”

Bo Frank, Mayor of Växjö

only guide for the strong environmental strategy implemented in Växjö, but it has demonstrated that it is a powerful awareness-raising and communication tool for the municipal team for environmental issues. Indeed, it ensures that the related challenges are clearly identified and taken on board by the city's elected officials and civil servants.

The visibility given to EcoBUDGET, by placing it at the centre of the budgetary and financial debate, promises, to the cities which adopt the tool, strong political consensus, and greater collaboration between decision-makers and technicians. This can open a new chapter in the alliance between environmental sustainability and its consequences: economic and social benefits.

### KEY FIGURES



## CASE STUDY

# RESILIENCE FOR & BY ALL SEMARANG (INDONESIA)

Semarang, the coastal capital of the Central Java Province in Indonesia, is home to 1.5 million people (population growth of 1.5% a year), a quarter of them victims of endemic poverty. 50% of the city's 373.7 km<sup>2</sup> surface area is taken up by agricultural and aquaculture activities and 33% by domestic housing. The city is under intense pressure, which is bound to be exacerbated by the anticipated impacts of climate change: more frequent flooding and longer dry seasons affecting poor communities on the coast (300,000 residents, 2,500 farmers and their families), over and above the repercussions of expected waves of migration.

The multiple consequences and foreseeable cost of inaction have prompted the city to participate in an integrated programme to build its climate change resilience.

The aim is to reduce vulnerability while strengthening the social links and economic activities of the residents most at risk.

01 - Breakwater device made of used tyres, Tugurejo sub-district







07

“Building climate resilience through the ACCCRN programme contributes to economic growth and to the social development of the city, as it focusses on helping poor populations meet their basic needs.”

Purnomo Dwi Sasongko, Director of the Urban Planning and Infrastructure Development Division of the Semarang Regional Development Planning Agency (BAPPEDA)



## SEMARANG (INDONESIA)

### A PROGRAMME DEDICATED TO BUILDING CLIMATE CHANGE RESILIENCE

The ACCCRN programme (see box), developed by the Rockefeller Foundation, offers ten Southeast Asian cities the opportunity to finance part of their climate change resilience programme. In Indonesia, the Foundation identified Semarang through a rigorous selection process based on the following criteria: high level of vulnerability to climate hazards, existence of environmental programmes and strong motivation on the part of the local government.

At the outset, the collaborative process was undermined by a series of constraining factors:

- lack of knowledge about climate change and resilience from both institutions and the population.
- ineffective existing adaptation programmes, more focussed on repairing than preventing, and more concentrated on physical aspects (for example, improving infrastructure drainage) than on social and economic impacts. There was also a lack of coordination between stakeholders which all had similar programmes.
- a very small financial allocation from the city dedicated to climate change adaptation policies, which is ineffectively managed as there is no specialised institution (most programmes are conducted by local and international stakeholders from civil society).

The ACCCRN programme took action in close cooperation with the local authorities by deciding to introduce a series of measures to lastingly realign the resilience policy:

- adaptation capacity building for local agents (institutions and community);
- knowledge production on current and future climate risks (studies on vulnerabilities, capacities, scenarios);
- pilot adaptation projects implemented in particularly vulnerable neighbourhoods.



#### ASIAN CITIES CLIMATE CHANGE RESILIENCE NETWORK (ACCCRN)

A programme initiated in 2009, financed by the Rockefeller Foundation and implemented by different regional partners such as the Institute for Social and Environmental Transition (ISET), Intellectap and Mercy Corps.

It operates in 10 cities in 4 countries (India, Indonesia, Thailand and Vietnam).

The programme, using a common methodology developed by ISET, aims to reduce the socioeconomic impacts and the vulnerability of the poorest population groups located in risk areas and with limited capacities to respond to climate change risks. It is designed to build capacities to plan, coordinate and implement cities' climate change resilience strategies via institutional strengthening and the implementation of adaptation actions. The programme will contribute to a database on "lessons learned" and good practices on resilience to climate change to be replicated in other cities.

[www.acccrn.org](http://www.acccrn.org)



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02 - Tidal flood, neighbourhood of Bandarharjo

01  
 Heading:  
 adaptation actions aim at protecting poor populations from climate hazards. Here, minimizing the impact of tidal flood on fishponds.

02  
 Semarang faces numerous climate hazards: an average of 36 days of inundation per year; some neighborhoods face 10 cm of subsidence per year; other coastal erosion and landslide.

## BUILDING RESILIENCE TO CLIMATE CHANGE: STEPS TO RAISING COMMON AWARENESS

In 2009, Semarang started implementing the programme in partnership with the British NGO Mercy Corps and the Indonesian NGO URDI (Urban and Regional Development Institute) for a 5-year period comprising three phases (see table 1).

Following the selection of the city, a second phase defines the strategy to build its climate change resilience (EUR 415,000 for 2009/10) and a third phase both implements adaptation actions (EUR 623,000 between 2010 and 2013) and aims to find complementary funds for further programmes.

### MECHANISMS TO IMPROVE COLLABORATION BETWEEN STAKEHOLDERS

The Shared Learning Dialogue (SLD), method developed by ISET (Institute for Social and Environmental Transition), gathers the different stakeholders at deliberative workshops where those who are represented exchange their expertise, concerns and knowledge. The aim is to reduce knowledge gaps between levels (local, national and international) and sectors (private, public, civil society and university) and in doing so, build a common vision and understanding of the problems and possible solutions to the risks involved.

Six SLDs were organised between 2009 and 2010 in order to design the climate change resilience strategy, improve coordination between

adaptation programmes, and enhance decision-making effectiveness.

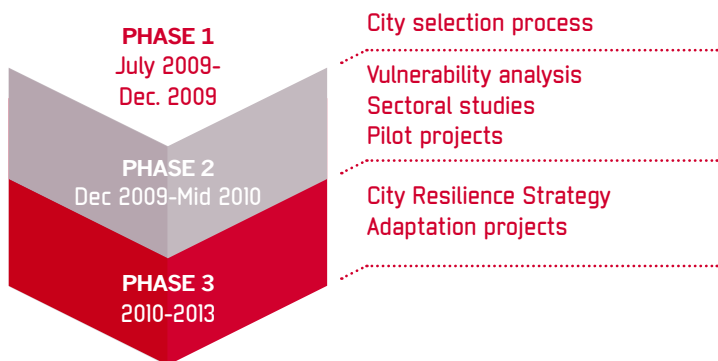
This system is completed with a City Working Group (CWG), established by a partnership agreement with the Mayor and comprising a multi-sectoral team of 20 representatives from the municipality, local and international NGOs and researchers from local universities, which is tasked with implementing the programme.

The local development agency BAPPEDA, known as *Champion*, plays an essential role in the CWG (see interview): it is in charge of leading the implementation of the project in the municipality, ensuring there is proper coordination between the different stakeholders and sustaining their interest in building climate change resilience.

Once the funding from the Rockefeller Foundation ends, the continuity and ownership of the project will be ensured by institutionalising and internalising the CWG within the municipality as an Expert Panel on Climate Change.

In order to scale up private sector involvement, the CWG plans to prepare a guide for companies presenting the investment potential in the adaptation plans (housing, sewage system, waste, etc.) or, otherwise, the associated risks! Indeed, despite an active search for cross-cutting and multi-sectoral collaboration, companies continue to lack commitment and to be reluctant to invest in projects where the results are not immediately visible.

**TABLE 1 - ACCCRN PROJECT IMPLEMENTATION PHASES IN SEMARANG**





## PRODUCING INFORMATION TO BETTER PREPARE CLIMATE CHANGE AND FINANCIAL RESILIENCE

The decision-making process can be facilitated by increasing the quality of understanding of climate change issues, thanks to dedicated tools to monitor adaptation policies. Consequently, the institutional capacity of the municipality is strengthened via training for city staff provided by the teams of Mercy Corps and URDI, and the definition of resilience indicators by ISET (they will be operational by the end of 2012).

Although the programme contributes to enhancing knowledge about climate change resilience (increase estimated at 50%), this understanding is uneven and mainly concerns the staff who are the most involved in the programme. Frequent team turnover also prevents knowledge capitalisation.

This is why the City Working Group (CWG) has also coordinated the production of three types of study with support from local universities:

- the assessment of vulnerabilities to climate change risks in the city, then in certain particularly vulnerable sub-districts,
- the assessment of the city's response capacities (institutional analysis and governance),
- studies on sectors that are sensitive to climate hazards (analysis of the city's drainage plan, the impact of coastal erosion for fishermen and ad hoc adaptation actions, and an economic and monetary analysis of the impacts of

03  
16 sub-districts of the city face water shortage and the public water supply system only covers 40% of the population. One priority adaptation project aims at developing a rainwater harvesting system.



03 - Sukorejo community queuing for clean water

© Mercy Corps

floods in the sub-district of Kemijen). The results of these different studies are set out in the City Resilience Strategy (CRS) document, some aspects of which have been included in the city's Mid-term Development Planning Programme, which sets guidelines for the actions to be implemented.

The strategy plan includes:

- the analysis of the consequences of past, cur-

rent and future climate change, which presents a business as usual version of scenarios and, on the contrary, a version integrating enhanced environmental resource management and a use of clean technologies.

Some data illustrate the cost of inaction on the part of the city: by 2050, it is estimated that the public water supply services will only cover 15% of the population against 40% today; the city



will experience over 70 days of flooding a year against 36 in 2010; 38 of the city's sub-districts will be vulnerable to landslides against 23 today.

- the analysis of the economic damage and the assessment of the cost of the impacts of climate hazards establishing a total economic cost for 2008 in excess of EUR 21m (see table 2).
  - the analysis of the vulnerability of the population groups and economic sectors which will be the most affected by the consequences of climate change. The vulnerability of the population is determined by its response capacities to climate hazards defined by socioeconomic conditions (population density, per capita income, quality of housing, access to public services...), and geographical and biophysical conditions (exposure to flooding, soil erosion, landslides...).
- Recommendations for adaptation actions are proposed for the short term (before 2014 and the end of the programme), mid-term (5 years) and long term (10 years) in order to address the eco-social impacts of future natural disasters.

**TABLE 2 – ANALYSIS OF IMPACT AND ECONOMIC LOSS OF COASTAL DEGRADATION IN SEMARANG IN 2008**

DAMAGE (2008)		ECONOMIC COST ASSESSMENT (2008)	
Fishpond	2,889 hectares	Mangrove	EUR 64,000
Farming	902 hectares	Fishpond	EUR 10,000
Settlement	10,425 houses	Farming	2.5 m
Infrastructure	2.27 km	Settlement	18.2 m
		Infrastructure	EUR 400,000

**“By including elements of the City Resilience Strategy in the city’s planning, our aim was to place climate change as a framework of thinking for Semarang.”**

Ratri Sutarto, Head of Communication and Replication at the ACCCRN – Mercy Corps

The total budget projection, for the implementation of 5 priority adaptation actions identified, stands at EUR 1.1m for a 3-year period, financed by the Rockefeller Foundation, ISET and Mercy Corps.

For the medium- and long-term actions, a strategy to seek financing has been launched by the CWG in order to guarantee the sustainability of the project and the implementation of actions once the Rockefeller Foundation funding ends in 2014. These potential sources of financing are mainly national funds, international donors and public-private partnerships.

**BETTER INTEGRATE TO CONVINCe, AND CHANGE THE FUTURE**

The emergence of a renewed body of practices and conceptual framework at the Semarang local authorities has given climate change-related issues their rightful place, and future scenarios have been integrated into current planning for adaptation actions.

The City Resilience Strategy (CRS) therefore only gained value when the Mid-term Development Planning Program for 2010-2015 included some of its elements. Prior to the ACCCRN programme, the design of municipal environmental sustainability programmes did not consider these projections. Thanks to the CRS, adaptation programmes are now included in the annual budget of the city, allowing them to be directly funded them without external agents.

The amount of information and local knowledge included in the CRS clearly makes it an empowerment tool for Semarang by enhancing its attractiveness and helping to give access to national funds and international investments. At the national level, Mercy Corps is thus working with the government with the aim of giving

“Thanks to the ACCCRN programme, there is greater awareness of the need to consider environmental issues in all the city’s development and planning policies. Moreover, the programme has contributed to increasing information, improving knowledge and developing an understanding of climate change and climate change resilience.”

Ratri Sutarto – Mercy Corps



priority to the city’s access, from 2014 onwards, to a national fund, the Indonesian Climate Change Trust Fund which had until now served for the definition of a National Action Plan Addressing Climate Change. The city will also be able to have access to a competitive subsidy system developed by the Ministry of Public Works, which gives cities incentives to implement more environmental initiatives related to climate change. At the international level, the German technical cooperation agency (GIZ) is currently developing an adaptation programme in partnership with the city on the basis of the analyses that have already been made.

#### **PILOT PROJECTS TO ADAPT AND TRANSFORM PRACTICES**

The city has set up four pilot projects, alongside the preparation of studies, institutional strengthening and the development of dialo-

gue between stakeholders, and has initiated the implementation of five priority adaptation actions defined in the CRS.

Each project (micro or macro) has sought to ensure that the local community takes ownership of it in order to secure its sustainability via information campaigns on climate change conducted in neighbourhoods, and the involvement of community associations and leaders in their design and implementation.

A first pilot micro project was implemented from January to June 2010 in the sub-district of Kemijen, a neighbourhood highly vulnerable to flooding.

A community revolving fund system allocated loans to female-headed families to allow them to improve their health conditions, give them greater access to water resources, and ensure they are efficiently managed, and thereby increase their resilience. 26 families benefitted

from the microfinance system that has been used to renovate the sanitary installations and repair the plumbing. The programme helped to give a greater decision-making power to female-headed families, increase solidarity among women in the community and raise awareness of climate change and its daily impacts. A larger scale replication is already planned.

A second pilot project involved protecting and restoring the coast in the sub-district of Tugurejo, in order to reduce risks of coastal erosion. The construction of a 180 m dyke with recycled tyres and the 20,000 planting of mangrove over an area of 8 hectares have strengthened local fishermen’s associations, which participated in the definition and implementation of the project, increased the protection of 6 hectares of community fish ponds and reactivated 1.5 hectares of fish farms.

In February 2011, the city launched the first



04 - Mangrove reforestation, Semarang coastal area

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04 Every adaptation project proposed by the ACCCRN programme has an important environmental aspect: here, the natural reforestation of coastal areas helps retaining tidal flood.

adaptation action prioritised in the CRS: the pilot installation of a rainwater harvesting system for individuals (5 homes) and communities (a school and 60 homes) in Wonosari Village. The project feasibility study shows that the rainwater harvesting system is an alternative water supply and not only mitigates the impact of flooding and water shortage (which affects 16 city districts), but also allows the residents to make savings. Indeed, depending on the type of water supply previously used (public pipe network, wells with or without an electric pump, river water...), families can save between EUR 16 and EUR 200 a year (for an investment of EUR 42 per household for a collective project, given that the monthly income for poor populations is less than EUR 22, i.e. EUR 264 a year). Following the success of the pilot action, the city has engaged in a public-private partnership to develop the system in other districts of the city.



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### 3

## QUESTIONS TO PURNOMO DWI SASONGKO

Director of the Urban Planning and Infrastructure Development Division of the Semarang Development Planning Agency (BAPPEDA)

### What was the motivation behind the city's participation in the ACCCRN programme?

At the beginning, we simply wanted to know the differences ahead of us between the current state of the climate and the future state: we wanted to acquire knowledge. Semarang needs to face various climate risks such as floods, landslides, tidal inundation, etc. and the impacts are getting worse and preventing the development of the city. The ACCCRN programme provides the opportunity to face these issues. It offers experimentation, tests and demonstrations of a series of actions that aim to build climate change resilience and mitigate the impacts of climate change on the city. This helps us to demonstrate that by building resilience,

climate risks and their impacts can be mitigated.

### How did you convince the Mayor and City Council to integrate the ACCCRN programme and the issue of climate change resilience into the city's planning strategy?

The Mayor's main concern is to reduce poverty, which affects 26% of the population of Semarang. The development of vulnerability analyses and scenarios of the future impacts of climate change have convinced the Mayor that building climate change resilience is a way to reduce the poverty and vulnerability of the communities at risk. The ACCCRN project alignment with the Mayor's programme was a decisive factor for its acceptance.

### How do you see the integration process in the city?

The city's integration of the project is an ongoing process. It takes time as you need to go further than simply training city staff or implementing adaptation actions: the programme must change the mindset so that the stakeholders understand the importance of climate change and the need to really build climate change resilience; the programme must create a framework that allows the city to build climate resilience over the long term; and the programme must create togetherness between stakeholders in order to bridge the sectorial gaps and enhance the effectiveness of decision-making.



## A PROCESS WELL UNDERWAY, A PROMISING PROJECT, VISIBLE BENEFITS

The ACCCRN process has contributed substantially to raising the municipality's awareness of climate change resilience issues. By long-term planning and thinking, coordinating the different stakeholders' expertise and activities, the city has enhanced its decision-making effectiveness. The transformation of adaptation practices mitigates the impact of natural disasters, reduces the vulnerability of poor communities, optimises the allocation of resources and, by doing so, promotes eco-social growth in the city.

By producing expert knowledge and giving information on the city's long term stability, its attractiveness for national and international funding is increased. In addition, the reinforcement of its institutional capacities allows it to position itself as a resilient city on both the national and international scene (national award and inter-

national conferences).

However, the programme does come up against various difficulties, notably concerning the project's financial, institutional and political sustainability.

Although the definition of the City Resilience Strategy facilitates access to national and international funding, the sources of endogenous financing, a performative element of resilience, are not as yet sufficiently taken into account for the funding of its adaptation.

Moreover, despite the fact that the municipality and the different stakeholders have effectively taken ownership of the project and integrated it, the high staff turnover and political cycles weaken its institutional and political sustainability.

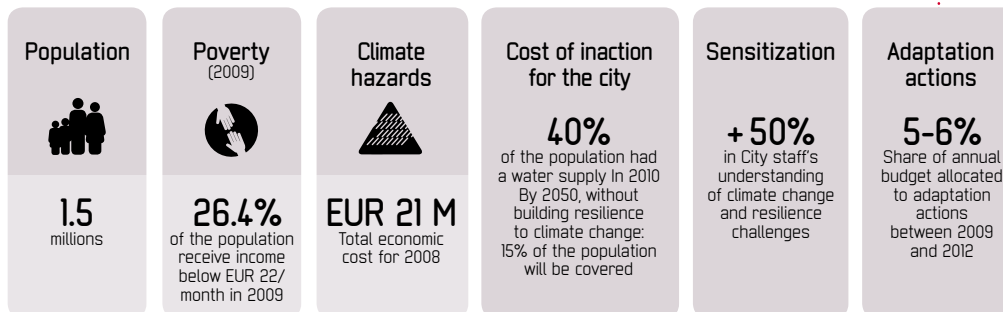
The small budget allocated to climate adaptation actions (between 5 and 6% of the total opera-



05 - Mangrove nursery, Tugurejo sub-district

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### KEY FIGURES



05  
 The local community has taken ownership of the adaptation actions and derive a major social and economic benefit from them: in this village, the plantation of thousands of mangrove plants to retain the flood enable to transform the place in a touristic site.

ting budget between 2009 and 2012) is also an example of how slowly the city is implementing the project and poses problems.

However, the sustainability of the process should be ensured through the encouraging evaluations of projects which have already been launched, the identification of persistent problems by the programme managers, as well as a very active effort to resolve them. The expected improvement in the living conditions of the most vulnerable communities, along with higher economic growth following the implementation of adaptation actions on a larger scale, are likely to make Semarang – a resilient and solidarity-based city – an example to be followed during the knowledge-sharing planned in the network of other Indonesian and Southeast Asian cities.

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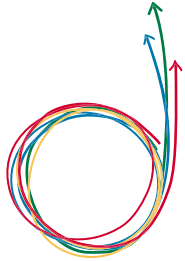
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