



Ecological Region

Commission 1
Report

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metropolis ●



Commission 1

Ecological Region

Presidency: Paris, Ile-de-France

Vice-Presidencies: Brazzaville, Caracas, Moscow

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Participating cities: Abidjan, Alexandria, Antananarivo, Aubagne, Barcelona, Bogotá, Brussels, Bucharest, Cairo, Dakar, Ecatepec, Gauteng Province, Grenoble, Guarulhos, Istanbul, Leusden, Lisbon, Mashhad, Medellín, Melbourne, State of Mexico, Milan, Nanterre, Porto Alegre, Puebla de Zaragoza, Rome, Sarajevo, Sofia


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01.

INTRODUCTION

The Commission 1 on Ecological Region was proposed and created during the Metropolis Board of Directors meeting at the 8th Metropolis World Congress held in Berlin in 2005.

The Commission was created following the first electoral campaign of the President of the Regional Council of Île-de-France, Mr. Jean Paul Huchon. The aim was to lay the foundations of a political ecology project that would make Île-de-France the biggest Ecological Region in Europe.

To make this project a reality, several urban and rural planning tools were put in place, such as the review of the regional planning and development programme, the regional Agenda 21 and several sectoral plans, such as the household waste recovery and assimilation plan, the plan for the protection and appreciation of biodiversity and the climate plan...

The first cycle of activity of the Commission (2005/2008) saw two technical meetings and a training session. The first technical meeting was held in Toronto in 2006, the second in Paris in 2007. A training session was held in Montreal in 2008, organised in collaboration with the Metropolis International Training Institute. A one-off workshop was held at the end of the cycle at the triennial congress in Sydney in October 2008.

The themes addressed during the first triennial cycle (2005/2008) were open space management (peri-urban agriculture and biodiversity), sustainable tourism and governance. The themes addressed during the second triennial cycle 2008/2011 are peri-urban agriculture, water, biodiversity, food security and climate change.

In December 2009, Commission 1 participated in a symposium organised by the Politecnico di Milano University called "Producing and exchanging territorial values". A presentation was given on neighbourhood agriculture in Île-de-France. In March 2009, the Commission attended the "The Challenges and Opportunities of Neighbourhood Agriculture in Île-de-France" workshop organised by the FAO at the World Urban Forum (UN-Habitat) in Rio de Janeiro. In June 2010, a technical meeting on peri-urban agriculture, water, biodiversity and food security was held in Paris. A training session on "cities and climate change" was also held in Paris, in December 2010.

This report presents the two main actions of the commission. The first section presents the case studies summaries at the technical meeting on peri-urban agriculture, water, biodiversity and food security held in June 2010. The second section presents the case studies summaries of the training session on cities and climate change held in December 2010. All presentations can be accessed on the Metropolis website, www.metropolis.org.

The conclusion contains a number of reports and recommendations proposed by participants on climate change at the training session on cities and climate change.

OPEN SPACES: PERI-URBAN AGRICULTURE, WATER, BIODIVERSITY AND FOOD SECURITY

1st meeting of Commission 1 Ecological Region 28-29 June 2010 - Paris

As part of the 2008/2011 cycle, and for reasons beyond our control, we organised the first technical workshop of Commission 1 in 2009. The first technical meeting on the theme “Open spaces: Peri-urban agriculture, water, biodiversity and food security” was held in June 2010.

This chapter summarises the addresses given at the technical meeting of Commission 1:

- The Île-de-France region and associated bodies (Green Spaces Agency, Natureparif, the Institute for Urban Planning and Development of Île-de-France – AU-îdF)
- The Water Agency of Seine Normandie region
- The city of Moscow
- The city of Guarulhos, São Paulo
- The city of Medellin
- Food security networks, such as Urgenci, RUAF and FAO Food for the Cities
- The association *Terres en Villes*
- Congo-Brazzaville
- The metropolitan region of Caracas.

2.1. A good decision-making tool for acquisition, development and management: The Green Spaces Agency ¹

The Île-de-France Green Spaces Agency plays a role in preserving biodiversity, natural spaces and agriculture. Since 1999, the Green Spaces Agency, in association with several partners, has conducted environmental inventories on regional properties.

What does the environmental monitoring of regional properties consist of?

This monitoring consists of conducting scientific assessments on all natural sites in the region in order to find out more about local biodiversity.

Flora, fauna (in particular birds and insects) and champignons are catalogued. A study containing an inventory of the geological heritage of sites has also been published by the French National Museum of Natural History (NMNH), naturalist associations based in Île-de-France² in particular the Île-de-France Ornithological Centre Île-de-France (CORIF), the Office for Insects and their Environment t (OPIE), the League for Bird Protection (LPO) and several research departments.

¹ Pierre Clavel, Green Spaces Agency

² From Île-de-France

What is the objective?

The objective of this monitoring is to learn more about the biodiversity of sites to ensure that:

- This biodiversity is systematically taken into account in the development policy of the Agency. In other words, all 107 habitats catalogued must be represented across all regional properties;
- It can provide specific responses for planning and management that take place on the sites.

In addition to the planning and management recommendations already implemented by the Agency, the first results of this monitoring (summary prepared by the NMNH in 2006) are also used as the basis for a “regional biodiversity strategy”.

In this report on biodiversity strategy, which was voted on at the regional council meeting of June 2007, environmental monitoring is considered a genuine programme for the acquisition of knowledge on biological endowment, making it possible to assess policies implemented and validate types of management.

Assessment of the first summary of appraisals

An initial assessment was carried out by the NMNH. Entitled “The biological endowment of sites of the Green Spaces Agency”, it summarises appraisals of 33 of the 67 regional properties conducted between 1999 and 2006, or on 8,564 hectares of land in total (73% of the total surface area of regional sites).

The main conclusions reached are as follows:

- The properties assessed for vegetation (22 in total) are home to 60% of the plant biodiversity of Ile-de-France but account for less than 1% of the region’s territory. Of the 952 species identified, 31% are considered to have heritage value and 87% are indigenous;
- With regards to birds, 111 species, or close to 70% of regional bird life (160 species), nest on properties in the region;
- As a result of canvassing by the Office for Insects and their Environment (OPIE), it was possible to catalogue great entomological biodiversity (butterflies, grasshoppers, locusts, crickets, dragonflies and beetles).

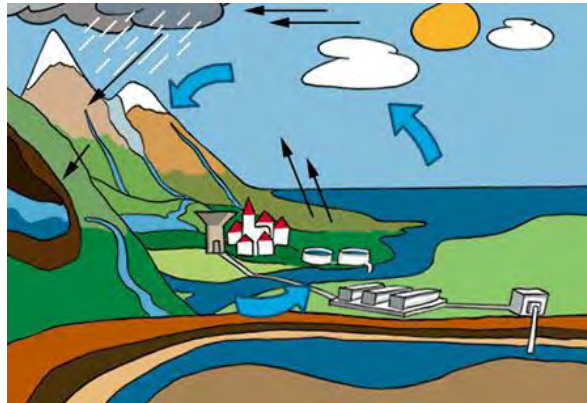
2.2. The protection of potable water supply facilities and aquatic environments in Île-de-France ³

In overall terms water supply facilities are degraded, both in terms of chemical pollutants and the state of the natural environment. The morphology of waterways is often degraded, wetlands disappear and fish life is affected.

These water supply facilities are found across the territory, both in rural and urban areas. Users of this water are also located in cities and rural areas. All use this water, but under different conditions.

³. Pascal Maret, director of Agriculture and the Environment - Water Agency of Seine Normandie region – AESN.

THE GREAT WATER CYCLE



Urban dwellers require water for consumption and to carry out their economic activities (industry, transport, road, rail and waterways, etc.), and release this water after degrading it. Water moves through urban environments through artificial networks, water channels, and even purely through canals. But this water comes from rural environments upstream and returns downstream, before flowing into the sea.

Rural dwellers also require water for consumption and crops, but also as a source of biodiversity (wetlands, rivers, etc.). While they use water, they must also protect it for their own use and use by others.

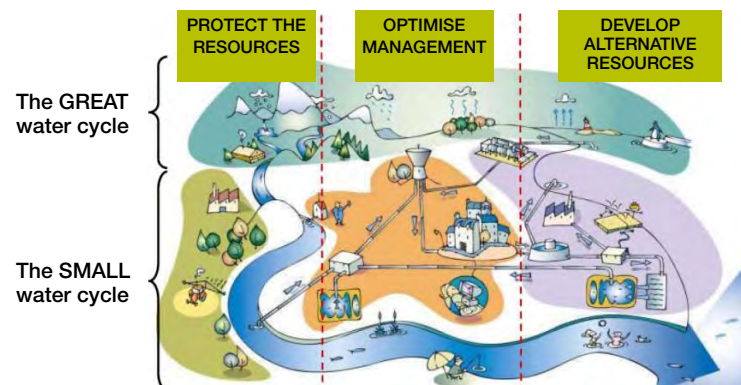
Thus, in water management there is a very real need for a partnership between urban and rural areas, a need for exchanges and coherence in water governance and policy.

The European Water Framework Directive stipulates that this shared resource should be managed by all stakeholders.

All of the above can be summed up as a succession of ecosystems that overlap and interact with each other. We must all endeavour to ensure that water bodies are in good condition sought in the framework directive, an objective France has made a commitment to achieve for 2/3 of its water bodies by 2015.

Appraisals, programmes, finance and large projects in which water agencies are essential partners.

THE SMALL WATER CYCLE



2.3. Urban development and the environment in Moscow⁴

No city in the world comparable to Moscow in terms of size can be said to have an environmental situation that is balanced and sustainable; the larger a city, the greater the chance of an imbalance in its ecosystem. Moscow is no exception. For several centuries until the beginning of the 20th century, it experienced somewhat slow growth. Since the 1990s, the city has seen political and socio-economic changes followed by brutal transformations and rapid growth, resulting in incoherent development.

Moscow's specific mechanisms for development were put in place taking its geographic location and the history of its development into account:

- Moscow is located on a plain along the river;
- Moscow is the industrial, scientific and economic centre of Russia. More than 80% of the nation's financial resources are concentrated there;
- According to official statistics, the population of the city as at 1 January 2009 was 10.509 million. Around 7% of the population of the Russian Federation lives in Moscow, and around 20% of Russia's GDP is produced there;
- Moscow is currently experiencing positive demographic trends: birth rates are rising, mortality rates are falling and life expectancy is on the rise;
- The city of Moscow has always been considered separate from the Russian Federation. Today, it is completely surrounded by a "peri-urban space", the Moscow region.

The current challenge consists of proposing a harmonious development of these two parts, the city centre and its periphery.

Historically, the city has developed in a radioconcentric manner. Within Moscow there are large urban parks and natural spaces that date from the 17th and 19th centuries. In addition, many public services and business parks date from the Soviet era. In recent years, work has been done to develop small rivers (of the 800 rivers and water bodies that used to exist in Moscow, only 140 have been preserved). Valleys have been included in the environmental corridor project, as have industrial areas containing natural spaces that require restoration. In short, any open space in the city of environmental benefit must integrate a plan for planned development.



⁴ Serguey Tkachenko, director of the Institute of Master Plan of Moscow.

The urban development plan for Moscow identifies the main lines of development and provides for a 35% increase in green areas for the whole metropolitan area. It proposes strategies for urban development both for the city as a whole and for independent sectors. The main objective of this document is to spatially zone Moscow so that a framework programme can be developed that is favourable to human activity. This plan must propose a spatial development that is beneficial to the interests and well-being of the public in terms of environmental quality and the health of the population, as well as the preservation of cultural heritage

2.4. Natureparif, the regional agency for nature and biodiversity in Île-de-France: A collegial structure ⁵

Natureparif was created on the initiative of the Île-de-France region, and is funded by the state. This not-for-profit organisation also comprises different colleges, each with the same number of votes: local authorities, environmental protection associations, higher education and research bodies, consular chambers, federations and, finally, public and private enterprises.

The mission of the Île-de-France Agency for Nature and Biodiversity Île-de-France is to collect existing knowledge and post it on the network, and identify regional priorities for action. It must also catalogue good practices designed to preserve biodiversity, so that they are more widely used. A new agency, the inspiration for its design comes directly from the *Grenelle de l'Environnement*⁶, and it is innovative also in its purpose: to act as a regional observatory with a focus entirely on nature.

Natureparif is now two years old, and has seen its membership grow threefold. It is producing its first indicators of the state of nature in conjunction with naturalist and scientific associations based in Île-de-France. It publishes practical guides, organises exhibits and produces brochures in order to make the inhabitants of Île-de-France aware of the region's biodiversity. Natureparif is also a partner in the European project "Life Plus". This project aims to promote biodiversity in urban areas, encourage communities to reintroduce nature to the city, train employees of municipal councils to manage green areas in a more environmentally friendly manner and inform the population of the consideration given to biodiversity via the organisation of the "French biodiversity capital" competition. This competition is open to towns and cities with more than 2,000 inhabitants.

Île-de-France in figures








- 11 million inhabitants (1,281 districts and 8 departments);
- 12,000 km²;
- The city covers 20% of Île-de-France; therefore, 80% of the area is covered by natural spaces and rural areas: 54% agricultural land, 23% forest and 3% natural spaces;
- 1,700 km of water bodies;
- 800 km of motorway and expressways;
- 3900 km of rail.

⁵ Stéphanie Lux, director of Natureparif and Gaëlle Le Jeune, head of institutional and international relations at Natureparif.

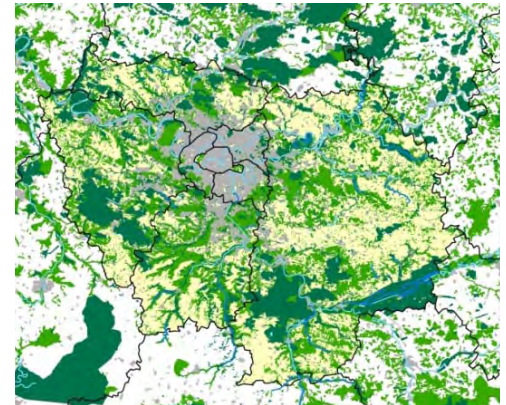
⁶ Launched on 21 May 2007, the Grenelle Environnement brings together for the first time the state and representatives of civil society in order to formulate a road map to promote the environment and sustainable development and housing.

Specific biodiversity in Île-de-France

- 228 species of birds
- 18,000 species of insects
- 60 species of mammals
- 17 species of reptiles
- 2 species of amphibians
- 1,500 species of plants.

	Department borders		Urban
	Main water bodies		Île-de-France region
	Biodiversity hubs		Biological reservoirs
	Complementary areas		

RESERVOIRS OF BIODIVERSITY

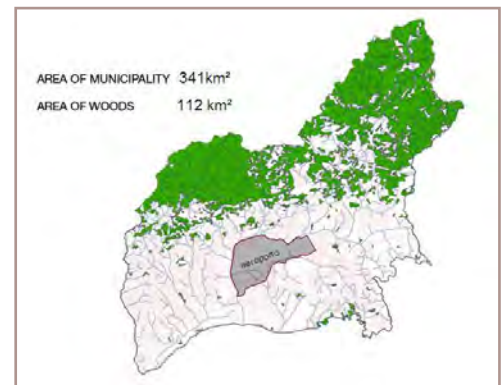


2.5. Environmental policy in the city of Guarulhos ⁷

Guarulhos is located in the megalopolis of São Paulo, the financial centre of Latin America. In the last five decades, Guarulhos has experienced rapid population growth. The city has developed between urban barriers that hinder growth, such as national highways and the largest international airport in Brazil. It is experiencing the fastest population growth in Brazil. One-third of its territory is comprised of areas of environmental protection. In this context, Guarulhos faces a major challenge: to protect the environment and improve the quality of life of its population.

Water and the environment in the city of Guarulhos

The city of Guarulhos faces important challenges in terms of the provision of fresh water supplies and sanitation. To meet this requirement, the Water and Sewage Treatment Agency (SAAE) was created in 1967. By virtue of its administrative and financial autonomy, its role was to provide the population with quality water that poses no risk to the health of the population. However, since the end of the 1990s, the city has had access to insufficient quantities of water to meet the needs of the population.



Since 2001, there have been major changes to this service: an internal reorganisation and the formulation of the General Plan for Water and Sewage Treatment. In addition, innovative projects have been implemented, such as environmental education programmes. Following these reforms, 95% of the population has potable water.

The treatment of wastewater and waste has represented a real challenge; until 2009, the city did not have a treatment system (water treatment plant). At present, the SAAE is in the process of building the first water treatment plans with the capacity to treat around 50% of wastewater produced by the city. The aim is to treat 75% of this wastewater by 2012. These actions are supported by the federal government.

⁷ João Roberto Rocha Moraes: Water and Sewage Treatment Agency - SAAE, Guarulhos - São Paulo, Brazil. Fernando Santomauro: International relations coordinator, Guarulhos town hall - São Paulo, Brazil.

2.6. Metropolises facing food emergencies: The example of Île-de-France⁸

Agriculture now faces the same challenges around the world: to produce more and produce better. Metropolises are established and developed on the best land and continue to consume for urbanisation, with no real awareness of long-term issues. While available space is becoming harder and harder to come by, due to the expansion of cities and the protection of the last remaining natural areas, the appetite for land for varying uses results in conflict, including between different agricultural purposes. By sourcing their supplies of food (and other products) using long-distance transport, cities have significantly increased the size of their ecological footprint and vulnerability, and lost social diversity.

However, observers are a little too quick to compare shorter circuits and long circuits. The recognition of geographic origin is a factor in the development of sustainable agriculture; agriculture is extremely dependent on the climate, and is in part responsible for climate change. The type of production will always be dependent on the quality of the soil, to which too little attention is still paid in all human activity, including agriculture. Landless production is unsustainable, while vertical farms are a prime example of a false good idea. Current exploitation systems, whether conventional or biological, will not be able to meet future requirements; new agronomic approaches will have to be sought out and implemented. Socio-cultural aspects are fundamental.

Nature in cities: The example of Île-de-France

Issues relating to the environment and nature are increasingly linked to cities and metropolises. Nature cannot be reduced to biodiversity, which is a result of good or bad environmental conditions. For man, nature also has a philosophical and cultural importance. Nature in the city can thus provide environmental, social and even economic services that cannot be replaced and must be addressed on all levels and in all of its components, both from a perspective of inserting the city in nature and from a perspective of inserting nature in the city.

The key is open space (i.e. all areas not built-up and made impermeable) in the periphery or in the city centre. The conditions of nature in the city are a product of a multitude of elements and factors, including the maintenance of a proportion of living soils on ground level and the restoration of the water cycle in urban environments, which are essential. However, biodiversity is naturally centrifugal in relation to the city.

For the city to be a place of great biodiversity, significant efforts must be made. The less onerous tasks include a reduction in the pressure on the management of existing green areas, starting with zero pesticides. The more onerous tasks include a more integrated conception of town planning and development among open spaces and built-up areas, with an important component of reclamation and rehabilitation of environments during urban renewal operations. The city must no longer be a breaking point.

A whole range of arrangements can be put in place, according to district and urban form. The participation of inhabitants is essential, since nature is a common good and the success of actions taken will essentially depend on their attitude.

⁸ Christian Thibault, director of the department for the urban and rural environment at the Institute for Urban Planning and Development of Île-de-France (IAU), Paris.

2.7. Agenda 21 in Île-de-France and the Ecological Region frame of reference ⁹

Presentation of the Agenda 21 approach

Prepared in a coordinated manner based on appraisals provided to the Île-de-France regional council in March 2009 and the work of thematic groups comprised of elected representatives and stakeholders, the Île-de-France Agenda 21 adopted in November 2009 constitutes a framework of reference for regional action.

The approach takes into account the numerous policies and structuring plans drafted since 2004 in areas such as economic development, professional training, research, transport, culture, sport, health, housing, the environment, sustainable development and planning.

The appraisal demonstrated that increasing consideration is being given to sustainable development and the need to structure its approach. Thus, Agenda 21 constitutes both an outcome of all policies implemented within the framework of the Ecological Region and a platform for their standardisation, with greater transversality of approaches.

The regional Agenda 21 was conceived as an evolutionary project. The aim of the appraisal phase, followed by the drafting of this document, was not to produce complete and definitive documents and action programmes. On the contrary: preference was given to the general architecture of an approach suited to the main objectives of the Ecological Region, accompanied by a programme of concrete actions and structuring tools (framework and system for evaluation).

The framework and organisation of the project are structured in such a way as to be able to adapt to changes in direction, such as adjustments to the action programme. The first year of implementation will be decisive to validating the project. Each year, the action plan will be updated based on proposed services and annual evaluations.

A more exhaustive evaluation is scheduled for the end of 2012 to confirm the relevance of the objectives and update them, then adapt the frame of reference and action programme accordingly. The action programme is structured in such a way that it takes into account the objectives of the Ecological Region that appear in the frame of reference.

The Ecological Region frame of reference

The objective of the Ecological Region frame of reference is to systematise the consideration of the objectives Ecological Region in all policies of the regional council. The frame of reference is part of an ongoing improvement drive, specific to the institution, focussed on the issues of sustainable development.

The frame of reference is an accompanying tool designed to achieve specific operational objectives and help bring policies together. Thus, it constitutes a simple and operational tool designed to make projects and texts more consistent with each other and allows the user to take the objectives of the Ecological Region into account in a concrete, functional manner, both upstream of deliberations and in a rereading of existing operations. Thus, it will play a role in the construction of future deliberations and allow the analysis of current policies.

⁹ Danielle Sauterel, engineer and head of the Agenda 21 and the Ecological Region, Île-de-France/Paris.

The frame of reference is structured around 10 objectives of the Ecological Region, grouped together according to 5 strategy guidelines: governance (work towards more cooperation and encourage neighbourhood management), social responsibility (promote exchanges on the principles and practices of the Ecological Region, including through European and international cooperation, and improve the people's quality of life in Île-de-France), environmental responsibility (reduce pollution, nuisances and risks by favouring prevention policies, preserve biodiversity, reduce attacks on ecosystems and greenhouse gas emissions and adapt to climate change), financial responsibility (create a framework that is favourable to environmentally responsible development and promote modes of development that create local employment, reduce the use of energy and natural resources and eco-activities) and transversality (promote sustainable planning and reduce the use of energy, natural resources and space).



2.8. Indicators and planning: two concepts that come together ¹⁰

Indicators and planning until recently gave the impression of two different schools of thought that did not coincide. This reconciliation has become indispensable and crucial issue of sharing a minimum number of indicators between different plans is raised for reasons of coherence and economy of scale.

Since the beginning of the 2000s, the main outlines and plans have had batteries of indicators that have been more or less fleshed out. This is the case in particular of the Master Plan of the Development and Management of Water (SDAGE), the Master Plan for Île-de-France (SDRIF), the Urban Transport Plan for Île-de-France (PDUIF), Regional Forest Guidelines (ORF), waste removal plans and the Regional Plan for Air Quality (RPAQ). Sets of indicators should also be prepared for outlines for community services. In reality, indicators are rarely used as real tools for the planning service, except during monitoring. Thus, the use of indicators could be extended to all stages of the planning process:

- Preparation (“*ex ante*”) for diagnoses (with status, pressure and understanding indicators) and proposals (target and response indicators);
- Implementation (“*in itinere*”) (monitoring and awareness indicators);
- Evaluation – (“*ex post*”) (results, assessment and distance indicators).

Indicators that are common to these categories exist, but are considered to be for different uses and occasions. Indicators of context or which help in the decision-making process are transversal.

¹⁰. Iuli Nascimento, geographer and town planner and coordinator of Commission 1, the Institute for Urban Planning and Development of Île-de-France/Paris - IAU-idF.

A growing interest that should enable obstacles to be overcome

The insufficient recourse to indicators in the planning process can be attributed to a number of factors. The formulation of a programme of indicators of sustainable development at each level of the territory was among the resolutions of the Rio Earth Summit of 1992 (Action 21: Chapter 40¹¹). However, the dissemination of the principles of sustainable development will take time, commensurate with the changes in paradigm and method that they involve.

A number of works have been carried out for several years on international (Organisation for Economic Cooperation and Development, United Nations Development Programme, the World Bank, etc.), European (European Commission, EUROSTAT, etc.) and national levels (the French Environmental Institute, the Interministerial Delegation for the Planning and Competitiveness of Territories, etc.). Thus, there are insufficient selections of official indicators. The absence of such a platform, plus a shortage of coordination between approaches and actors, leads to the proposal for each outline or plan of a specific series of indicators, overlooking what was proposed beforehand. This results in a plethora of heterogeneous indicators. There are insufficient resources to formulate and update them, and are rarely implemented.

Planning is designed a priori to be applied during its validity period: it is not a question of altering a plan as a function of results, except when this plan is reviewed. And yet, this would be one of the main justifications for the implementation of indicators. The duration of plans poses an obstacle: it is difficult to organise monitoring or evaluation for plans of five years' duration or less. The dates of available data rarely coincide with the reference period. The difficulty associated with formulating simple, shared indicators must also be recognised.

The example of OCEAN (Observation of the Use of Agricultural and Natural Space), the only monitoring indicator stipulated in the SDRIF of 1994, bears witness to this state of affairs. What is seemingly more evident and more essential than the use of space to monitor the application of a master plan? Several bodies have worked on this and encountered problems of definition, intervals for the receipt of data and differences in the precision of means of observation, among others.

The territorialisation of indicators is not simple: not all variables can be applied on all levels, either due to a lack of relevance or the unavailability of local data. How, for example, can Ecological Region indicators be structured with indicators used for eco-districts?

Many desirable indicators have yet to be developed. Despite these obstacles, it would appear difficult to go without indicators. The obligation to provide strategic environmental evaluation for certain plans and programmes, and more generally the gradual dissemination of a culture of evaluation, will require the adoption of a minimum number of operational indicators. The beginnings of a framework are being formulated. In recent years, initiatives for the preparation of sustainable development indicators have multiplied: European and domestic strategies, regional atlases, performance indicators, etc. National and European debates on the issue are enriched by analyses within regions and other autonomous regions, while confirming the need for a territorial dimension to sustainable development. There is great demand for territorial diagnosis indicators that highlight the strengths and weaknesses of territories in terms of sustainable development and guide the preparation of local projects. The approaches of indicators also have connected interests: a questioning of sustainable development, the organisation of information as geographic information systems (GIS), etc.

¹¹. <http://www.un.org/esa/sustdev/documents/agenda21/french/action40.htm>

Synthetic indicators in response to the need for context indicators

As a result of the multiplication of plans and stakeholders in a given territory, it has become difficult to isolate the part that corresponds to the implementation of actions of a particular type in the evolution of this territory. A plan may address just one or several themes, when these themes are necessarily linked to others (waste and transport, urban density and natural spaces, etc.). Thus, it is indispensable to consider the evolution of a global context, even for a sectoral plan.

Indicators that describe a context can be simple (one of the best examples is the price per barrel of oil). To characterise the context of a territory and its evolution in a global manner, to bring areas that are usually separate together, it seemed attractive to use “synthetic” indicators. However, translating complex, multiform phenomena in a synthetic manner is a difficult exercise, all the more so if one wishes to reflect the social, economic or environmental situation of a country, region or territory.

The choice of base indicators and the preparation of synthetic indicators inevitably involve a degree of subjectivity, even a political vision. Social and environmental issues do not have a synthetic indicators equivalent to GDP, which can make them more difficult to grasp in public debate.

The environmental and social crises and emergencies we are experiencing at present and which stand out require us to do so. There have been numerous efforts to create synthetic indicators for social situations and environmental quality in a territory, both in France and overseas. Thus, in January 2008 France established an Economic Performance and Social Progress Measurement Commission (CMPEPS), also known as the Stiglitz Commission¹². Without doubt, the indicators proposed to date could be improved, but the work of this commission have the merit of opening up debate and highlight the recognition of a need to integrate social and environmental aspects to the extent of the level of development of a country or territory.

2.9. Urban agriculture and public space in Medellín ¹³

Medellin is par excellence a place of concentration of people and living beings. The current configuration of urban centres is the result of the urbanisation process in the past that integrated the development needs of the present; indeed, urban planners had an anthropocentric conception of urban development. This approach gave rise to densely-populated and chaotic cities. At present, urban requirements and conditions differ and cities are feeling the effects of serious problems as a result of inappropriate land use.

- The types of housing currently being built in rural areas, valleys and mountains cause degradation in these environments and contribute to imbalances in ecological cycles across the planet.
- In view of this, an important question could be asked: what type of city do we want, and how do we integrate it into its natural environment and agriculture in a sustainable manner? We want a green city inhabitable by humans, a city made for pedestrians and without social inequality, a safe city in harmony with the population, a city that is sustainable.

¹². The name of its president, Joseph Stiglitz.

¹³. Nora Elena Moreno Rave, sociologist at the Administrative Planning Department, Office of the Mayor of Medellín- Colombia.

- It would be advisable to put in place an inventory method in order to repair the errors of the past and propose the creation of green areas in built-up areas. The integration of urban and peri-urban agriculture, wetlands and aquatic areas in urban can help balance the production and consumption requirements of the population.



2.10. The URGENCI network ¹⁴

The URGENCI network brings together a global network of local and joint and several partnerships of producers and consumers (LJSPPC):

- *Teikeis* in Japan;
- *Community supported agriculture* in English-speaking countries;
- *Agriculture soutenue par la communauté* in Quebec;
- *Associations pour le Maintien de l'Agriculture Paysanne* in France (AMAP)¹⁵.

In 2010, the Year of Biodiversity, a triple threat emerged: how to feed the world, to take one-third of humanity out of poverty and to save the biosphere. Members of the international committee of URGENCI, farmers and consumer stakeholders want to propose tools that could contribute to the introduction of positive changes:

- CSA¹⁶ /AMAP dissemination projects;
- North-South twinning projects;
- Partnerships to save biodiversity, with seed banks;
- International programmes to provide farmers with training in AMAP/CSA.

Objectives of the network

The network constitutes an effective tool to fight the warming of the planet, as well as a local and joint and several partnership between producers and consumers.

The main objective of URGENCI, however, is to multiply the partnership between LJSP-PC and other forms of shorter circuits, local authorities, consular agricultural services and all types of NGOs that support the development of shorter circuits in agricultural activity. The aim is to bring together actors in order to:

- Provide sufficient quantities of local, healthy food;
- Preserve local agricultural biodiversity;
- Facilitate exchanges of authorised seeds;
- Protect the rights of farmers and consumers.

In addition, each city or community can develop these partnerships as a function of their requirements in order to fight against the monopoly of agribusiness and achieve local food independence.

¹⁴. Andrea Calori, president of URGENCI

¹⁵. Associations for the Maintenance of Family Farming.

¹⁶. Community Sustained Agriculture.

2.11. Feeding an urbanised world in 2050: A territorial approach to sustainable food ¹⁷



The mission of the United Nations Food and Agriculture Organisation (FAO) is to ensure the food security and nutritional security of the world's population. The organisation aims to ensure that people have regular access to good quality food that allows them to lead healthy, active lives.

Today, more than half of the world's population lives in cities. By 2050, this figure will reach 70% of a world population of more than 9 billion, according to UN forecasts. Social revolts caused by the food crisis occurred in cities in more than 40 countries in late 2007 and in 2008. These revolts demonstrated the importance of the political issue of food for cities. Moreover, urban populations are on the front line when it comes to nutritional transition, associated with obesity and diabetes, and is often accompanied by the dual burden of malnutrition (obesity and deficiencies in micronutrients). In addition, some difficulties are the result of deviations linked to the quest for short-term profits.

The growth of the urban population poses challenges in particular as regards the production, provision and management of stocks, but also the nutritional quality and commercialisation of food, education on food and nutrition and the management of natural resources around cities (land, water and forest management). Situations of conflict and natural disasters exacerbate difficulties and pose specific problems, in particular for displaced populations.

Today, it is necessary and urgent to develop policies for the sustainable feeding of cities, both from a quantitative and a qualitative point of view. Consumption models that are less rich and more energy-economical must be encouraged, both in developed and less developed countries. In particular, they will be based on local food systems centred around cities, with closer interaction between urban areas and rural areas. Political intervention is required to meet these challenges.

Due to the principle of general competences, autonomous regions must work with all other stakeholders: local and national public agents, private sector (production, in particular producer organisations, distribution, commercialisation, the water and waste sectors, etc.), civil society and consumers. Together, they must develop strategies that are suited to local realities and take into account the complexity of issues. Cooperation between cities must also be developed.

Within the FAO, the multidisciplinary initiative "Food for Cities" is developing a framework for action on a global level and supports field projects. It works with a number of partners, in particular Metropolis. The FAO website¹⁸ provides access to information on current issues and projects in progress. The discussion list¹⁹ created by the Food for Cities initiative is open to all on request, allows participation in exchanges and the sharing of information and helps guide action and policy.

¹⁷. Julien Custot. FAO, Food for the Cities.

¹⁸. www.fao.org/fcit.

¹⁹. food-for-cities@dgroups.org.

2.12. The RUAF network ²⁰

The RUAF foundation (www.ruaf.org) is a network of exchanges between regional bodies and associated partners with a shared vision of development and a reduction in urban poverty. Together, they implement several international urban agriculture and food security programmes. Among these programmes, the RUAF-Rural Cities (Cities Farming) network supports the creation of multi-concessionary platforms, the formulation of a strategic agenda for agriculture and food security in 20 cities around the world and the “From Seed to Table Programme” (2009-2010), thus favouring the development of the value chain. This support helps finance the organisation and urban and peri-urban agriculture in member cities.

At present, the RUAF network is working in several cities and metropolises that are members of Metropolis (Accra, Amman, Bangalore, Belo Horizonte, Beijing, Bogota, Harare and Shanghai). In addition, the RUAF network supports urban and peri-urban agriculture projects in Tunis, Colombo, Dakar, Chengdu and La Paz.

Objectives of the network:

The network aims to increase awareness of the role and functions of urban and peri-urban agriculture in relation to the main objectives and challenges of urban policies (urban poverty, food, economic crisis, water shortages and climate change).

It also works towards the formulation of policies for planning action on urban and peri-urban agriculture: specific examples of projects and policies have been formulated and implemented by local governments (Beijing, Accra, Rosario).

RUAF is evaluating the current situation, demands and shortcomings in urban and peri-urban agriculture projects to improve programmes already in progress.

²⁰ Marielle Dubbeling, RUAF Foundation: Global coordinator at RUAF –From Seed to Table Programme, peri-urban agricultural consultant, Leusden – The Netherlands..

²¹ Serge Bonnefoy, technical secretary of Terres en Villes.

²² The term “peri-urban agriculture” is generically used by consolidated city-counties and professional agricultural organisations, with no distinction being made between urban and peri-urban agriculture.

²³ Associated with conflicts raised by new cities in the late 1960s, it consisted for the agricultural sector of negotiating acceptable conditions in terms of influence, the acquisition cost of land, indemnification and even compensation for the most innovative operations.

²⁴ Initiated in favour of the circular of the prime minister (1975) that institutes the natural equilibrium areas, the experience of Île-de-France produced a major innovation, the Green Spaces Agency (AEV) (the Law of 6 May 1976) that puts in place the regional perimeters for development (PRIF).

²⁵ The first project of this type was the urban project implemented in Lyon in 1979. This was followed by Grenoble and its consolidated city-counties in 1984 and Saint-Étienne in 1987.

2.13. Shorter circuits and food governance in French towns and metropolises ²¹

Urban and peri-urban agriculture as a tool

With the protection of agricultural land, shorter circuits have been one of the two pillars of territorial policy to promote peri-urban agriculture²² since the 1970s. However, this theme is hardly present in two of the three main long-term approaches to peri-urban agriculture. The ownership approach of agriculture²³ and the planning approach adopted in Île-de-France²⁴ in fact promote the protection of agricultural and natural areas.

On the other hand, the project approach in the Rhône-Alpes²⁵ based on the alliance between local stakeholders and the implementation of agricultural programmes gives a prominent place to the theme of shorter circuits and to the protection and development of agricultural areas, development policy and agricultural facilities. In the following years, Aubagne and Perpignan adopted a comparable schema. This territorial agricultural approach took over in the 1990s the towns and cities in the production areas in the south-west, west then north of France.

For a number of years, the rise of civil society stakeholders (cf. in particular associations for the maintenance of family farming) and concerns in the area of sustainable cities and metropolitanisation have breathed new life into the theme of shorter circuits.

Peri-urban agriculture policies and shorter circuits

The analysis of peri-urban agricultural policies in 18 of the 20 towns and cities²⁶ of the *Terres en Villes* network reveals two large families and three types of situation in the area of shorter circuits.

The consideration is different according to whether the town or city belongs to the group of cities that have preserved a green belt (these are mainly in the south-east) or the group of large basins of intensive production. In this case, a number of local actors are engaged in a debate that presents peri-urban agriculture (and its policy in favour of shorter circuits) as a counter-model to productivist agriculture. This militant opposition can at times open up a significant gap between urban and rural stakeholders.

MEMBER CITIES OF THE NETWORK
TERRES EN VILLES



The green belt cities²⁷ have clearly done most to encourage shorter circuits. These actions relate to the different types of circuits: direct farm sales, retail market, collective point of sale, mass market retail, the wholesale market, etc. Depending on whether or not the territory or agricultural organisation are the engines of the same, these actions will emphasise the territory or business. The decision to create a territorial mark such as Aubagne, Grenoble, Lille and even Perpignan²⁸ bears witness to a territorial strategic vision.

A second group consists of towns and villages²⁹ from production basins that have implemented actions to promote diversification in agriculture for a decade. The voluntary initiative has often been driven forward by the community, either on its own or with minority stakeholders in the agriculture sector looking to promote another type of agriculture. While open and underlying conflicts have often punctuated these experiences, they tend to die down, with shorter circuits how a recognised and more widely-shared theme. The most common actions relate to assistance for collective points of sale, support for biological farming, and the promotion of AMAP and direct sale operations.

Finally, the third scenario brings together towns and cities that are only now initiating actions that seek to promote the diversification of agricultural basins that focus exclusively on mass production³⁰. Often, these are traditional professional organisations that aim to convince operators, who can be rather unresponsive, to become interested in the local market.

Thus, policies to encourage shorter circuits have in the main sought to specify and disseminate the concept of peri-urban agriculture, characterise and develop a quality product and, in short, promote the commercialisation of this product, in particular via direct distribution channels. In general, their direct impact has been limited to the impact of a niche policy.

In recent years, several changes have occurred that have led to the replacement of shorter circuits (and their policy) in the more overall vision of the local food system (and a territorial food policy): the consideration of food by society, the emergence of new stakeholders in peri-urban agricultural policies, the evolution of shorter circuit policies, strategies related to the crisis in agriculture and the evolution of the Common Agricultural Policy, the fight against global warming, a reappraisal of urban analyses and policy (cf. Agenda 21 consultation of Greater Paris).

²⁶. Outside Île-de-France and the town of Saint-Nazaire.

²⁷. Aubagne, Grenoble, Lyon, Saint-Etienne, the particular case of Perpignan but also to a lesser degree Nantes or Lille...

²⁸. In the latter case only, the initiative comes from professionals. This is due to the role of local market gardening, which produces for shipment as well as for the local market.

²⁹. The east of Toulouse, Rennes and Lorient are representative of this category.

³⁰. Amiens is the archetype of this.

Shorter circuits to an urban food policy?

The notion of a local or territorial food system has given rise to various research efforts, instance of government intervention and European projects. This notion is often understood as quality agricultural produce, even if it means limiting its scope. Amsterdam, Greater London and Rome are most often cited.

Several French local authorities and players in neighbourhood agriculture in the AMAP network play a role in this movement while the majority of agricultural organisations and economic stakeholders have little local involvement. At the same time, the forthcoming “Law of Agriculture Modernisation” will put in place a national food policy with the approval of farmers but which ignores the territorial dimension, i.e. the complexity of the period.

The work done³¹ in 2008 and 2009 on food governance of towns and cities by Terres en Villes and its partners³² shows that there is still no food governance policy for towns and cities that can take into account all fields (the economic field of production and distribution, social issues, public health, culture, etc.) and ensure a fortiori coherence in strategy. Often, each field has its own impenetrable systems of actors, objectives and rules.

On the other hand, the analysis revealed that in some of the most advanced towns and cities in terms of shorter circuits, connections were emerging between these different fields and that the partner city centre/region was the driving force behind this local construction, which brings private and public stakeholders together.

This is the case in particular of Aubagne. The city of Aubagne has embarked on a peri-urban agriculture policy that has been expanded to include the greater administrative district council. With a great social tradition, the city has embarked on a structured participative democracy process and implementation of food initiatives, in particular aimed at populations the experiencing difficulties: workshop-city-health and solidarity grocer's shop. At present, city and region look to cross agricultural policy between local councils, food initiatives implemented on a local council level and urban planning by drawing on the wealth of the social fabric, including AMAP³³. The health workshop (city) and the platform for participative democracy (greater administrative district council) are where this first form of food governance first occurred.

At present, the connection between peri-urban agriculture and food policy lies between a conception of agriculture that tends to reduce food policy to a relocation and better promotion of agricultural production on the one hand and, on the other, a militant conception that barely makes the link between food, the conurbation project, urban planning and real agriculture in the territory.

2.14. Peri-urban agriculture, accessibility and distribution:

Hunger in Africa ³⁴

The struggle for food security has become an imperative in a world where, according to the FAO, around 80% of the population lives without access to regular meals. With regards to programmes in which Congo is a participant in the area of food security (PSSA, PNSA, PNMIT-NEPAD, etc.), food security is clearly greater in consumption zones, which consist of its two main cities, which are home to more than 60% of the population but cover less than 1% of the country. The same is also true of cities in most less developed countries (which are home to between 60 and 80% of the population). This, of course, poses enormous problems when it comes to meeting food requirements. This situation

³¹. Work done in 2008 and 2009 in 18 towns and cities of the Terres en Villes network.

³². APCA, TRAME, FNCivam, FNCuma and Inra.

³³. Aubagne is the registered office of the international AMAP network.

³⁴. Séraphin Hilaire Okoko, construction engineer and director of studies and implementation / Brazzaville, Congo-Brazzaville.

became a precursor to income-producing activities. Indeed, in urban areas, there is agricultural activity that provides access to income, relatively stable employment and production that rural areas and difficult to supply for a larger number of people alongside services provided by the third sector. However, the difficulties inherent to the promotion of these activities have prevented the emergence of this production system, which continues to operate in the informal sector.

Production from urban and peri-urban areas is a very important complement in the food balance. While rural areas provide the basis of production in their archaic production structures, production from peri-urban areas provide complement production from rural areas. Peri-urban production is produced by a panel of small producers organised with the resources of the periphery at their disposal. Their levels of production do not allow them to escape their almost endemic economic and social marginalisation; hence the interest in boosting their ability to engage in business, either directly or through their professional intermediaries or even through states or local authorities.

The development of urban and peri-urban agriculture has the advantage of occurring close to accompanying institutions and areas of consumption (markets). Thus, they must provide better services than those provided in rural areas in terms of production and the environmental promotion of ecosystems (soil conservation, rational management and sustainable development of these activities). Unfortunately, the areas reserved for these activities are becoming increasingly restricted due to anthropic pressure. While the FAO encourages family farming to combat hunger, the sustainability of these efforts nevertheless depends on a socio-professional organisation accompanied by coherent structural support.

With regards to the reduction in the agriculture budget, in the absence of a policy aimed at peri-urban agriculture despite the existence of models for initiatives for agricultural development through the peri-urban economy implemented by NGOs to support local development and financed by international partners, alternatives for reducing imports appear to be futile. In the absence of any sustainability, the beneficiaries of these actions, which have managerial autonomy, are, in the post-project phase, in the process of reverting to their original precarious situation. The availability of, and access to, peri-urban production has become a sensitive issue.

Addressing the development challenges described could avert local food crises. If, however, there is no immediate intervention to meet the needs of a growing number of consumers in urban areas, this crisis could come to pass in several cities in Africa and in other cities in less developed countries elsewhere.

The document addresses the presentation of physical and socio-economic indicators and the issue of the development of peri-urban agriculture in Congo. The structuring and socio-economic impacts of peri-urban production and the challenges of development that could improve supply conditions in urban markets based on peri-urban agricultural production are also addressed.

Problems and perspectives: The case of Congo - Africa

The development of peri-urban agriculture in Africa, and in large cities in Congo in particular, is subject to endogenous constraints associated with the definition and implementation of strategic policies for urban development on the one hand and constraints the product of external finance on the other.

The almost endemic pauperisation of rural areas is one factor behind the population growth seen in large cities, hindering efforts to combat poverty. Anthropoc pressure, together with uncontrolled urbanisation, is eroding spaces that could be used for agricultural activities in

peri-urban areas and causes permanent problems securing employment and accessing land and other means of production. These constraints are criteria for poverty that prevent Africans in general from combating hunger in an effective manner.

Anchored at the bottom of the human development indicator (HDI) table and human and monetary poverty tables (more than half of its adult population lives on less than a dollar a day), Congo has experienced climbing economic growth for a decade. This growth has also been accompanied by sizeable budget surpluses. Paradoxically, it only spends 3% of its budget on agriculture, resulting in chronic food insecurity (more than a quarter of a billion US dollars is spent on food imports).

However, the need to develop Congo's vast natural resources has prompted it to initiate programmes to develop peri-urban production (independence of farmers), resulting in improvements to food supplies to the cities of Pointe-Noire and Brazzaville. These programmes, which have been co-financed by international partners (mainly the European Union and Coopération Française), have constituted pilots that have demonstrated the intrinsic potential of peri-urban areas to help reduce poverty in urban areas.

Thus, for close to twenty years professional agricultural operations have been established that combine agricultural and livestock farming and, in particular, market garden crops, poultry and/or pig farms and subsistence crops in semi-rural environments, resulting in greater availability and accessibility of market garden and animal produce in markets. Similarly, these programmes have resulted in the emergence of a diversified workforce (more than 5,000 operations and around 9,000 jobs directly created) in the areas concerned.

The choice of crops grown, areas stipulated and production systems are a product of the search for food equilibrium between peri-urban production linked to intensive production practices in smaller areas (market gardening) and rural production that is favourable to extensive agricultural practices over larger areas (subsistence crop production).

Despite this production potential, however, demand for vegetables remains unmet. On average, the shortfall remains equivalent to more than 40% of demand.

In the post-project phase, this shortfall is even greater due to the deterioration in the level of precariousness of the operators. No mechanism has been put in place to ensure the sustainability of gains, while all constraints on production have been defined. Despite the existence of finance for food security from partners, international finance can no longer be mobilised for peri-urban initiatives.



Cities' demand for food is growing inexorably. Peri-urban areas have strengths that can be focussed to improve their effectiveness in providing additional food supplies. A number of short-term and infrastructure-based opportunities (technical, financial and socio-economic) must be seized. They must be accompanied by the support sought from local government so that they can be appropriated by the populations that benefit, allowing them to combat hunger effectively.

2.15. Metropolitan system of public open spaces ³⁵

A proposal for the strategic plan for the metropolitan region of Caracas for 2020

In 2009, the metropolitan region of Caracas (RMC), the capital of Venezuela, accounted for 18% of the country's population (5.113 million). The region consists of five municipal councils and in 2009 was home to 60% of the population of the RMC, which was estimated at 3,205,463 inhabitants.

Caracas is located in the north of Venezuela, 900 metres above sea level and around 11km south of the coast. This is the "Cordillera de la Costa" which separates the city from the sea, with altitudes in excess of 2,700m. Nestled in the heart of the Guaire valley, it extends along some 21km. In geographical terms it is a complex city, comprised of a system of narrow valleys connected by tunnels and viaducts.

The political capital of Venezuela, Caracas adopted the General Urban Plan in 1983 to guide and plan local government development policy. This plan addresses environmental sustainability and socio-spatial integration to centre the organisation of the metropolitan area. It proposes integrated government and a strategic management of the metropolitan area, and aims to interact with the current dynamic of urban centres and different levels of government in an attempt to reach a consensus in the coordination of different stakeholders and different interests. In this context, objectives of primordial importance have been set:

- To reinstate a fair distribution of services and facilities in order to integrate the informal and formal sectors of the city;
- To preserve protected areas and national parks from urban pressures and heavy demand, in order to guarantee and improve their interaction.

However, the proposal to create a metropolitan system of open public spaces contradicts the long-standing trend of uncontrolled urban expansion. The city first and foremost became a metropolis, then a "city-region" without the changes and adaptations that could have been adopted as part of a coherent process of urban development.

The metropolitan region of Caracas is an example of a functional unit that, above and beyond a physical/spatial plan, must put in place a process to identify and diagnose existing problems to then set out the general guidelines for action to provide solutions for an area that no longer corresponds to its political-administrative boundaries.

While it operates as a metropolis, local administrations (municipalities) govern with no coordination between them. The metropolitan authority exercises power over just 57% of its territory.

At present the city has a new tool, "the open spaces system". It organises all open spaces, Ávila national park and the protected area of the metropolitan region of Caracas. This open spaces system aims to reclaim the environmental corridor in accordance with the different valleys that run from north to south.

³⁵ Zulma Bolivar, town planner at the Metropolitan Town Planning Institute, Caracas – Venezuela.



A proposal for the organisation of the area based on special areas of environmental regulation (Áreas de Reglamentación Ambiental Especial - ABRAES) will allow the future development of the city to be reorganised and areas defined for expansion according to their characteristics and possibilities. The objective of the proposal is to create an environmentally-sustainable city that uses alternative energies in an efficient manner and a city with local environmental facilities and resources that improve the metabolism of the urban environment through environmental sanitation. The result is a city that plans for and reduces its vulnerability to, and the management of, environmental risks.

The creation, articulation and protection of open spaces and spaces for recreation in interaction with natural spaces require the recovery of wooded areas in urban environments, which have deteriorated in recent years.

Finally, the strategy of the Urban Development Plan proposes the implementation of a process to provide communication, awareness and training to citizens, a pillar of the environmental planning and social participation process.

03.

CITIES AND CLIMATE CHANGE

Training session Commission 1 Ecological Region 15-17 December 2010 - Paris

This chapter presents the case studies summaries on the role of local authorities in the implementation of territorial policies and tools for risk prevention and climate change management, i.e. how to introduce the climate-energy dimension into local policies and urban planning documents to move towards approaches to the mitigation of, and adaptation to, climate change:

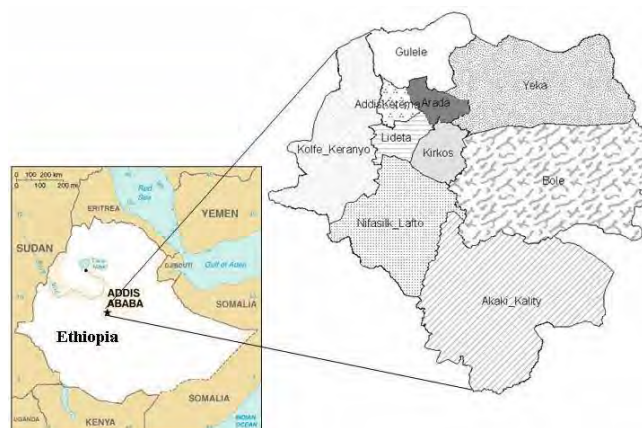
- The city of Addis Ababa;
- The metropolitan region of Caracas;
- The Food and Agriculture Organisation – FAO;
- The city of Moscow;
- The city of Porto Alegre;
- Congo-Brazzaville;
- The city of Pune;
- The region of Île-de-France/Paris.

3.1. Challenges and efforts in Addis Ababa to mitigate climate change ³⁶

Addis Ababa is the capital of Ethiopia and diplomatic capital of the African Union. The city is home to the Economic Commission for Africa (CEA), among other international organisations.

Founded in 1887 (124 years ago), it has a population of 3 million and an area of 540km² and lies at an altitude of between 2200 and 3000m. The region has average annual rainfall of 1200mm. Average annual temperature is 16°C.

The city contains 220km² of planted areas (forests and gallery forests, parks and agricultural fields). 15% of the city is covered by vegetation, and the dominant species of plant



³⁶ Haileselassie Sebhatu, director of the environmental protection service. Office of the Mayor of Addis Ababa- Ethiopia

is eucalyptus (80km²). The city and its surrounding areas are rich in fauna and flora, including some rare species.

The main challenges facing the city are of several types. First, there is the degradation of the natural environment, water in the rivers and catchments, deforestation and soil erosion. Then there are several problems associated with noise, water, air and ground pollution. Finally, there is the collection and treatment of waste.



The city has a master plan, but it is not adhered to and unsuitable uses of land can be seen, such as the use of natural spaces that should be protected.

As series of public policies have been put in place to address the problems faced by the city, such as water supplies, the quality of health facilities, energy requirements and the inefficient use of traditional energy resources (fuel, wood, manure, agricultural waste, etc.) and improvements in public transport.

The aim of these public policies is to meet demand for housing, develop public transport infrastructure in order to improve access to the city, improve water and energy supplies to the population, and improve health and education services (primary, secondary, technical and university).

With regards to the environment, the local government is developing a greening programme for the city and putting in place a system to monitor pollution generated by households and industry. It has also promised improvements in the management of household waste (solids and liquids).

As part of the development and reconversion plan for 2010/2015, Addis Ababa has emphasised the creation of green urban areas, the rehabilitation of catchments, consideration of the risk of flooding and the preservation of biodiversity.

The local government aims to apply laws designed to improve public services (education, health, public transport, energy, water, road infrastructure, communications services).

With regards to economic development, the aim is to develop a programme for the creation of micro and small businesses by encouraging an optimal environment that can attract foreign investment, develop public-private partnerships and reinforce democracy and governance among institutions.

3.2. Impacts of climate change in Venezuela ³⁶

Climate change can affect Venezuela in a number of ways:

- Deforestation and subsequent reduction in soil moisture;
- The transformation of semi-arid regions into arid regions;
- The loss of biodiversity, with the risk of the loss of around 30% of known species;
- More frequent forest fires;

³⁷. Juan Carlos Sánchez, consultant to the metropolitan region of Caracas.

- A reduction in yields from polyculture and livestock farming;
- More frequent natural disasters, with tragic consequences for the population.

The climatic phenomena seen in Venezuela in the last 22 years demonstrate that natural disasters have increased in the last decade.

These indications not only demonstrate the vulnerability of the country, but also highlight the increase in global temperatures with the increase in natural disasters seen in recent years. This requires particular efforts to be made, both in the long-term and short-term, to reduce the social and economic consequences of these phenomena. These efforts must be framed within a national policy for the mitigation of climate change which, to date, has not been formulated.

Opportunities for adaptation to, and the mitigation of, climate change for the city of Caracas

Caracas is highly vulnerable to climate change. The identification of natural disasters that can be brought about by climate change requires several different types of prevention measures:

- Measures to increase the awareness of the population;
- The establishment of a warning system;
- The displacement of the population living in high-risk areas;
- The implementation of a drought plan;
- The protection of drainage basins;
- The protection of forests and urban vegetation;
- The drainage of rain water;
- The review and control of construction standards and standards for building maintenance.

Only some of these measures have been adopted, while others are in the process of development and must be incorporated into the environmental policy of the metropolitan region of Caracas.

3.3. Forest management and climate change - FAO ³⁸

“Forest Management and Climate Change - Support from the FAO to the Cities” is a tool for increasing awareness of the relationship between the forest, land use, urban development and climate change. UN-Habitat emphasised that the resilience of cities to extreme events is reduced if forest cover is lost. In addition, political decision-makers should be aware of the great importance of the presence of forests in urban areas. Unfortunately, this awareness does not yet exist. To a large extent, urban forests do not appear in city plans.

The report explains what urban and peri-urban forests (PUFs) are and the role of the Food and Agriculture Organisation of the United Nations in this approach. The coherent management of space integrated with synergies between sectors is the strategic element for action on urban and peri-urban forests. For example, the FAO is working in collaboration with the “Collaborative Partnership on Forests”, the “One UN” initiative and the UN-REDD³⁹ programme to raise urban issues in relation to climate change. The main advantage of UPFs on climate change has been highlighted by the positive effects on heat islands, their role in carbon storage and their mitigation of the degradation of resources in the event of natural disasters associated with extreme weather events.

³⁸. Michelle Gauthier, forestry officer for the United Nations Food and Agriculture Organisation (FAO), and Clive Davies, international consultant on urban and peri-urban forestry (FAO).

³⁹. The UN-REDD Programme is the collaborative United Nations initiative to reduce emissions from deforestation and forest degradation (REDD).

The presentation demonstrates the advantages of PUFs within the framework of the resilience of the climate and adaptation to climate change. These advantages are in addition to others, such as the protection of drainage basins, the creation of areas for recreation and well-being, the preservation of biodiversity and food security. In general, the institutional framework for PUFs is weak, but the FAO is proposing directives in order to put international directives in place for strategic decision-making and policies to promote urban and peri-urban forests⁴⁰. The main users of these directives will be political decision-makers and city and national governments. The schedule for drafting these directives begins in 2011, and is expected to be completed in 2012. Much of the work is to be done in 2011, the International Year of Forests.

3.4. The vulnerability of Moscow to climate change ⁴¹

In 2009, the Russian federal government proposed guidelines on climate change, with regional governments them adapting to these guidelines. In 2010, the city of Moscow approved rules and regulations aimed at municipal services in order to disseminate and put effective environmental and climate change technologies into practice. These rules and regulations propose measures to improve the energy and environmental efficiency of municipal services to limit greenhouse gas emissions (GHG). These measures should improve the energy efficiency of Moscow by 43% between now and 2025.



In this context, a special programme of energy-saving initiatives between now and 2020 was proposed and approved by the Moscow city government in 2009. As part of this programme, new systems that use biogas as an alternative source of energy for heating have been built on the air station at Kurianovo.

The town planning scheme of the city of Moscow does not contain a chapter on climate change. Nevertheless, the following measures have been taken to reduce impacts on the climate:

- The reduction of energy supplies to municipal services;
- The conversion of fuels in accordance with European standards (Euro-4 and Euro-5);
- A better balance between built-up areas and green areas of the city (30% of the total surface area of the city should consist of green areas and protected areas. Industrial zones should fall in size by around 50%).

⁴⁰. International Voluntary Guidelines for policy and strategic decision-making for urban and peri-urban forests.

⁴¹. Liudmila Tkachenko, department of planning in the city of Moscow – Russia.

3.5. Incorporation of actions to mitigate and adapt to climate change in town planning documents of Porto Alegre ⁴¹

The report introduces a number of important traits of the city: its location and geographic characteristics and a short summary of its fauna and flora.

A number of elements in legislation, the use of solar energy and rain water, the impact of buildings on greenhouse gas emissions and strategic actions implemented to reduce these effects are presented, as is the establishment of the green municipal label, which encourage civilian construction to improve its energy performance.



It is apparent that public transport can help reduce energy consumption and greenhouse gas emissions (GHG): the integrated operation of the public transport system in Porto Alegre (bus, minibus and urban train network) is one example of this. The plan of the municipal council for cycle routes and their incorporation into the public transport system also plays an important role in achieving this objective.

The joint initiative of ICLEI (The Renewable Energy Reference Centre) and the Municipal Secretariat of the Environment on a report on good practice, relates to sources of energy. There are plans, for example, for the installation of a wind farm in the metropolitan region.

In short, the importance of arboriculture and open spaces (green areas, urban parks, forests and protected area) in reducing the prevalence of heat islands and pockets of atmospheric pollution is again highlighted. The Office of the Mayor of Porto Alegre has given particular importance to arboriculture (the planting of 10,000 new trees) to absorb CO₂.

3.6. The role of tropical forests in the mitigation of, and adaptation to, climate change in Brazzaville ⁴³

Signs of global warming, the product of an industrialisation process based on the excessive use of fossil fuels, pose a dangerous threat to life on our planet. Experts agree that the conjuration of risks involves keeping a significant amount of tree cover on the surface of the Earth and a drastic reduction in greenhouse gas emissions the product of human activity.

Tropical forests, the "lungs of the earth", are a major asset in the fight against climate change. Ensuring that they are in good condition is the surest and most inexpensive way that can immediately help mitigate the greenhouse effect. The issue has become all the more crucial since the Rio Earth Summit of 1992, and some voices have called for the integrated protection of these forests so that they can serve as carbon sinks.

⁴² Eduardo N. Rechden, director of the INOVAPOA project – Office of the Mayor of Porto Alegre, Brazil.

⁴³ Séraphin Hilaire Okoko, construction engineer and director of studies and implementation / Brazzaville, Congo-Brazzaville.

Aware of this worrying situation, the authorities are developing initiatives designed to preserve forest ecosystems and prevent shortages of wood, energy and other ligneous and non-ligneous products with high value-added.

A reforestation programme has been implemented to stimulate the emergence of environmental awareness via the education of public opinion on the effects of climate change through the authorities, business, civil society and urban, rural and indigenous populations.

3.7. Towards adaptation to climate change:

The city of Pune ⁴⁴

Climate change is a global challenge, and can only be addressed by the whole international community through an approach based on multilateral cooperation. On numerous occasions, the government of India has demonstrated its real commitment to the fight against climate change.

Although India is an active player on the national and international stages when it comes to issues relating to climate change, in reality cities still have little awareness or knowledge of this subject.

Heat waves in the city, unexpected rains that lasted for a year that resulted in a shortage of potable water, flooding and an increase in disease have taught us that these events are consequences of climate change. The most significant way to reduce the vulnerability of cities and boost the ability to adapt to climate is education. There are several initiatives that make Pune unique in its approach to awareness of, and information to, climate change but much has still yet to be done.

India has come a long way along the road to progress and industrialisation in order to achieve a better quality of life. It has created a process for economic development without taking into account the negative impacts on nature and the environment. However, development without consideration for the environment constitutes a threat to human existence.

The implementation of a mere process for progress and development cannot solve all problems; rather, it would only exacerbate them. There must be interaction between development and the environment; “sustainable development” is the correct path to development. As the famous proverb goes, “the Earth was not given to you by your parents; it was lent to you by your children”.

⁴⁴. Ms. Vandana Chavan, member of the legislative council of the government of the state of Maharashtra, Pune, India.



3.8. “Climate” issues in Île-de-France ⁴⁵

To limit the (long-term) increase in average global temperatures to a maximum of 2 degrees compared with temperatures before the Industrial Revolution, greenhouse gas (GHG) emissions would have to be halved worldwide. This mean factor calculated by the G8 aims to reduce emissions from the equivalent of more than 7 billion tonnes of carbon (MdteqC) to 3.7 billion tonnes, the maximum carbon absorption capacity of oceans and the biosphere per year. The result differs according to country, with less-developed countries only able to increase their current emission levels.

In Europe, the objective of reducing GHG emissions corresponds to the equitable part of this objective to halve GHG emissions in overall terms, i.e. Facteur 4 (base year 1990).

In France, Facteur 4 generally refers to the commitment undertaken in 2003 before the international community by the President and Prime Minister to reduce national greenhouse gas emissions by three-quarters by 2050 on their 1990 levels. This objective was later incorporated in the “*Stratégie Nationale de Développement Sostenible*” (national strategy for sustainable development) in June 2003, the climate plan of July 2004 and the “*Loi de Programme Fixant les Orientations de sa Politique Énergétique*” (law setting the direction of energy policy) in July 2005, with confirmation in the *Grenelle de l'Environnement* in 2007.

Mitigation policy:

- France ratified the Kyoto Protocol, which entered into force by way of a decree passed in 2005;
- In 2003, it made a commitment to reduce its GHG emissions by three-quarters by 2050;
- The 2004 – 2012 climate plan sets out national actions to prevent climate change.

Adaptation policy:

⁴⁵ Christian Thibault, director of studies at IAU Île-de-France, Paris..

- France formulated a national strategy for adaptation to climate change in 2006;
- The drafting of a national plan is currently in progress.

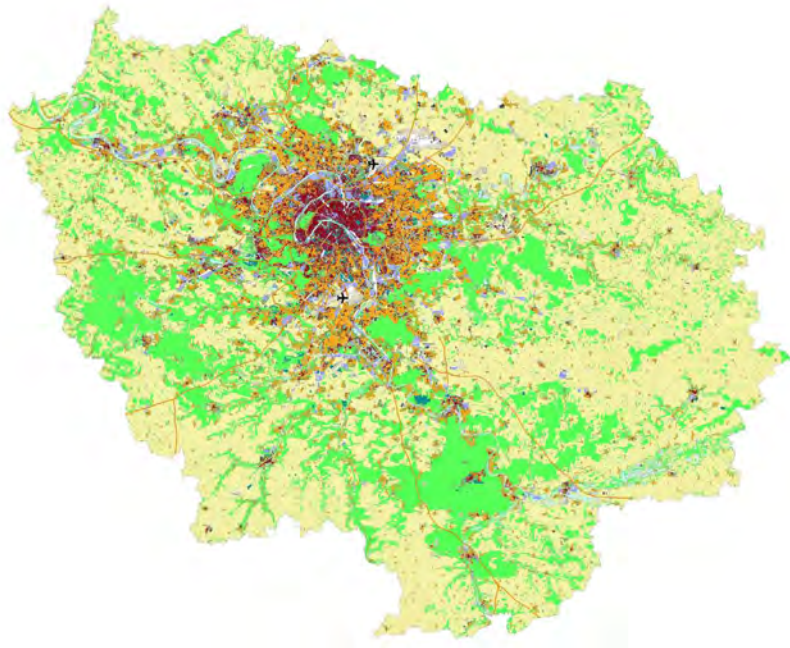
The 3 x 20 European objective is taken up by the *Grenelle de l'Environnement*:

- 20% reduction in GHG emissions;
- 20% reduction in energy consumption by increasing energy efficiency;
- Renewable energy sources to account for 20% of final energy consumption (23% in France) by 2020.

Grenelle law 1 (August 2009) renders mandatory the formulation of territorial climate energy plans (TCEP) for towns and cities with more than 50,000 inhabitants. Grenelle law 2 (July 2010) establishes regional climate, air and energy schemes (RCAES) jointly prepared by the central and regional governments.

Facts and figures on Île-de-France

Île-de-France: Area of 12,000km²



- Close to 80% rural space, of which 52% agricultural land and 23% forest;
- 20% urban space, of which 15% built-up areas and 5% open urban space;
- A radio-concentric organisation centred on a city of 9 million inhabitants.

04.

CONCLUSION

Commission 1 Ecological Regions organised two meetings in Paris for the 2008/2011 period: a technical meeting between 28-29 June 2010, entitled “Open spaces: Peri-urban agriculture, water and biodiversity”, and a specific training session between 15-17 December 2010 on “cities and climate change”. At the end of this training session, participants wrote an overview that brought together the main ideas and recommendations exchanged on this issue. First of all, we noted a group of problems and a group of possible solutions to solve them. For this reason, we thought it would be beneficial to show these exchanges to other metropolises in order to share them and give floor to new initiatives.

The report

Climate change is among us. A number of consequences can already be confirmed, and could become more widespread in the future. Work done internationally by scientists and synthesised by the IPCC (Intergovernmental Panel on Climate Change) emphasises that even if all efforts to control GHG emissions were implemented, the anticipated climatic disturbances would be inevitable due to the inertia of the climate system. We must adapt to these changes⁴⁶.

Climate change prevention must henceforth encompass as a whole actions to mitigate this phenomenon (reduction of GHG emissions, carbon sequestration) already in progress and actions to adapt (reduction of the vulnerability of ecosystems and societies) that are less engaged. A global conception is indispensable in order to both minimise contradictions (such as air conditioning and GHG emissions) and maximise synergies (such as carbon sequestration and regulating climate in urban areas using vegetation) between these two types of actions.

The fragility of metropolises against climate change

Adaptation to climate change can be defined as our ability to adjust our natural and human systems in response to climatic phenomena or the effects thereof in order to mitigate their negative effects or optimise their positive effects. Be that as it may, climate change will result in costs for society. The impacts of climate change will not be spread uniformly from a geographical perspective or equitably in terms of territory from an individual or social perspective. The vulnerability of each city and of the most exposed activities and groups must be assessed in order to take the appropriate measures.

In view of their size and large populations (more than one million), impacts on the environment and complexity, metropolises are fragile and have specific vulnerabilities to climate change. Metropolises also represent an appropriate scale for understanding these problems, both in terms of space and governance: all territories are affected and altered by climate change. Environmental issues that could be considered traditional issues, such as air quality, access to potable water, waste management, energy security, the clearing of green public spaces, the proximity of agricultural land and the maintenance of biodiversity have become even more urgent with the issue of climate change. Similarly, social issues are now more central than ever. The challenge of climate change should be used to put into action responses that provide multiple social and environmental benefits (such as greener cities). Reduction and mitigation measures can also be a source of innovation, employment and activity (the development of local energy, restoration of buildings, the adaptation of infrastructure, new agricultural and forestry production measures, environmental engineering, etc.).

⁴⁶. Climate adaptation plan of the Ministry of Ecology, Energy, Sustainable Development and the Sea (MEEDDM), June 2010.

Climate change will affect human health in direct and indirect ways that are often misunderstood⁴⁷. Several types of action are proposed in the MEEDDM climate adaptation plan, with human health to be considered in its modern sense and extended to include well-being:

- Closer monitoring and surveillance;
- Studies and research into the relationship between climate change and air quality, and impacts on human health
- The evaluation and management of health impacts on water or the quality of buildings (air indoors, etc.)
- Promotion of the multi-functionality of green spaces and urban and peri-urban forest
- Prevention and responsibility for preventing the heat island effect and the impact of heat waves.

Climate change will alter the range of surviving species. In this context, cities must pose less and less of an obstacle to their movement and become more open to participating more in frameworks of ecological continuity. Within this framework, studies must be conducted to evaluate plant species that are most climate-resistant.

Territorialised actions on energy and climate must be articulated and integrated into local planning tools (in the broader sense, including agreement between stakeholders and the participation of the population in decision-making). To do this, scales and themes must be stated.

Metropolitanisation imposes a change of scale. The future of all spaces, whether built up or open, is linked. Measures cannot be limited to developed spaces or cities alone, and metropolises must address the issue of peri-urban areas. The multifunctionality of open spaces is to be promoted not only for environmental issues, but also social issues by focusing in particular on food security, continuity in circulation and access to resources.

Current and future mobility is exposed to the effects of climate change. The aim is to ensure the movement and security of people and goods. Transport is one sector that should see the most profound changes both in technology and policy. This sector is also directly associated with urban forms and functions (access to employment, services, leisure areas, social ties, lifestyles, etc.).

⁴⁷. Climate adaptation plan of the Ministry of Ecology, Energy, Sustainable Development and the Sea (MEEDDM), June 2010



Urban development and buildings are also affected: cities are characterised by apartment buildings and activities, road, rail and waterways and green spaces and recreation areas. The structures of cities are long-lasting; hence the need to take adaptation to climate change into account in all urban planning documents. Urban development and the construction of sustainable buildings (good solar orientation, improved land permeability, the capture of rainwater, etc.) must be given preference with a view to reducing overall GHG emissions.

Climate change will lead to an across-the-board increase in natural risks that result in pressures on all cities. However, coastal cities, cities at high altitude and cities in arid environments will be even more vulnerable. Low-lying coasts, which are often densely populated, are particularly threatened by erosion and/or submersion due to the expected rise in sea levels. The preservation of mangroves is indispensable. Mountain cities are subject to erosion, land movements and greater pollution of the atmosphere. Cities in arid environments will experience greater tensions in relation to water supplies and water cycle management (violent flooding).

The expected increase in temperatures and longer periods of drought will increase the risk of forest fires and increase the frequency of heat waves aggravated by urban heat islands.

Climate change will influence the dynamics of the water cycle in terms of quantity and quality. It must be possible to evaluate what changes are likely to occur, but also to prepare for these changes in order to avoid floods, which in themselves can affect health (water quality) and food security.

The energy sector must adapt to climate change in a very broad-ranging context that includes the reduction in GHG emissions, energy sobriety, household fuel poverty, the increase in demand for air conditioning in summer and the securing of infrastructure and supplies. Energy security must be guaranteed through a diversification of energy sources. However, it also involves the bioclimatic adaptation of buildings (passive ventilation).

Thought must be given to methods of governance and participation, in order to improve coordination and agreement across all territorial levels. Participative democracy is an important lever for mobilising and securing popular support.

Information provided to the public on climate change must be reinforced by greater communication. This is true in particular of measures implemented, which must be shared and made visible, in order to prompt good behaviour within populations and promote recognition of the actions of local elected representatives.

Decision-makers, elected officials and of local authorities officials need specific training in order to be able to make better decisions in the process of anticipation and in crisis management.

Agenda 21s, which are open to different levels of communities, are very suitable supports for all of these initiatives.

The measures planned take into account numerous uncertainties that persist in relation to climate change and its consequences for our societies. All implications of these consequences must be assessed in order to avert any potential pernicious consequences, and avoid any solutions that are not.

Greater interdisciplinarity is required in the area of research. To ensure this outcome, the partnership between research and public decision-makers and between basic research and applied research must be encouraged and research-action developed.

Stakeholders in territories are increasingly aware of their responsibilities in the area of climate change prevention, but are hindered by a lack of common tools and frames of reference. It is essential to encourage exchanges between “advanced” metropolises and “backward” metropolises in these areas: these would lead to a different distinction between drawn between “developed”, “emerging” and “underdeveloped”: a city in an underdeveloped country can take more action in this area than a city in a developed country, as we have demonstrated at congresses and workshops of the world association of major metropolises, Metropolis.

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