CLIMATE CHANCE

2018

GLOBAL OBSERVATORY
ON NON-STATE
CLIMATE ACTION

BOOK 2

The mobilisation
of the local and
subnational governments

CLIMATE
CHANCE

•

Around the World in 80 Initiatives

•

**AROUND THE WORLD IN 80 INITIATIVES IS
AN EXTRACT FROM THE ANNUAL REPORT 2018
OF THE GLOBAL OBSERVATORY
OF NON-STATE CLIMATE ACTION**

**> DOWNLOAD FULL REPORT
ON WWW.CLIMATE-CHANCE.ORG**

●

Around the World in 80 initiatives

●

A GLOBAL PICTURE OF RECENT CLIMATE ACTIONS TO CAPTURE TRENDS AT WORK IN 10 SECTORS OF TERRITORIAL PUBLIC POLICIES.

By modelling the shape of the city, urban planning strategies guide its functions and the collective behaviour of its inhabitants and is, therefore, of significance in respect to CO_2 emissions. Wherever they are implemented, new approaches to urban spaces (eco-neighbourhoods, eco-cities, smart cities, etc.), which cover a wide range of initiatives, aim for sustainable management of space, relocalised lifestyles and combine a concern for energy savings and reductions in greenhouse gas emissions (GHG). There are numerous examples of these major development trends: making cities greener and smarter while reducing urban sprawl. The following is a sample of these initiatives.

Depending on their legal competences, cities and regions can link local, national and international climate goals to the traditional regulatory and legal planning levers that they have available. Recently, some cities have distinguished themselves by demonstrating innovation in the creation of new instruments to facilitate the implementation, management and monitoring of such projects. As part of the adaptation of its public space to climate change, Durango (Spain) has developed a tool to categorise different parts of the city in order to evaluate the transformations they require. By embracing the principles of efficiency and the socio-environmental virtue of smart cities and eco-neighbourhoods, large cities support climate goals by renewing their urban amenities or reorganising the sharing of public space. For example, New York, which in September 2017 announced that it had already converted 70% of its lighting to LEDs, or Tirana which has inaugurated the largest pedestrian zone in the Balkans.

Another trend is the greening of public spaces which leads to increasingly innovative collaborations between architects, urban planners, real estate businesses and local governments. Integrating vegetation with urban amenities and increasing green spaces can create shade, make streets cooler and combat air pollution. For example, in May 2018, Wycombe became the first English town to require developers to include canopy coverage over 25% of new built surfaces. More spectacularly, in 2017, China unveiled Nanjing Vertical Forest, a tower block engulfed in a thick layer of plants producing oxygen and absorbing CO_2, based on the vertical forests in Milan and Lausanne. These large-scale projects are at the forefront of initiatives in the verticalisation and greening of buildings in cities. Thanks to trees, cities are also equipping themselves with carbon sinks and offering local stakeholders the opportunity to offset their CO_2 emissions. For example, in the city of Austin or King County, the County where Seattle is located, private businesses are generating funds for the protection and planting of trees in the city in exchange for carbon credits offsetting their CO_2 emissions.

Finally, while summer 2018 was marked by a heatwave worldwide, combating the extension and intensification of heat islands is a must for large cities. This summer Paris tested three "islands of freshness" platforms, connected to its district cooling system. Based on the Stuttgart model, the aerated streets of new eco-cities such as Yennenga in Burkina Faso or Zenata in Morocco are designed to make use of wind movements. And, having finalised the first "ventilation corridor" in late 2017, Beijing is planning the creation of a further 17 as a solution to air pollution in the Chinese capital.

FRANCE
the Lyon-Confluence sustainable district

SPAIN
Durango's innovative urban planning tool

ALBANIA
Tirana inaugurates the largest pedestrian zone in the Balkans

CHINA
The world's first forest city being built in Liuzhou

UNITED STATES
Columbus, Ohio, at the forefront of modal planning

MOROCCO
Zenata eco-city, a new sustainable city

BURKINA FASO
Yennenga, the new sustainable city

INDIA
West Bengal, New Town, the green city

FRANCE
the Lyon-Confluence sustainable district

The Lyon-Confluence urban project aims to double the size of central Lyon without increasing its GHG emissions. Several international partnerships (Europe, Japan) are making this district a testing ground for the sustainable development of the Metropole de Lyon. The first phase was completed in July 2018 with 500,000 m2 of new buildings offering high environmental performance (passive and positive energy) and energy-efficient renovations confirmed for 70,000 m2 of old buildings (housing, offices, public amenities). The total capacity of the photovoltaic installations in the neighbourhood exceeds 2 MW. Thanks to the development of the Lyon-Confluence smart grid, the Métropole de Lyon has a neat tool for monitoring energy performance.
https://www.smarter-together.eu/fr/cities/lyon#/

CHINA
The world's first forest city being built in Liuzhou

In June 2017, "forest city" work started on the outskirts of Liuzhou in southern China. This project, presented at COP21 in 2015, is the result of a partnership between the City Council's planning department and the famous architect Stefano Boeri. The city will have a surface area of 138 ha and will have 30,000 inhabitants. Inspired by the two Bosco Verticale tower blocks in Milan, also designed by Boeri, all the Liuzhou Forest City buildings will be covered with more than 100 different plant species. The project, which will be completed by 2020, will absorb more than 10,000 tonnes of CO_2 and produce 900 tonnes of oxygen each year.
http://english.liuzhou.gov.cn/

SPAIN
Durango's innovative urban planning tool

To support its urban transformation objective, Durango has acquired the "Faktore Berdea" planning tool which identifies different types of public spaces to ensure that there are sufficient shaded areas and permeable surfaces to avoid heat islands and flooding. The city has committed itself to a major urban transformation thanks to this tool: 26 green public spaces and 22 spaces near water have been identified for connection in a "green mesh" (malla verde). A signatory to the Covenant of Mayors since 2015, Durango has been nominated for the Transformative Action Awards 2018, whose results are to be announced in November 2018.
http://www.sustainablecities.eu/

MOROCCO
Zenata eco-city, a new sustainable city

In 2017, the eco-city of Zenata, between Casablanca and Rabat, completed the first phase of its development. Built on sustainable development and resilience principles, the particular layout of the city facilitates natural ventilation and significant greening (-3 C in summer), with 30% of green spaces, including a central park with a surface area of 7 ha. Public lighting is entirely LED, and the city promotes public transport including the creation of an intermodal station (train, express metro, bus, taxi). The first housing estate, with a surface area of 70 ha, was delivered in July 2017 and the development and upgrading of the coastal road, currently a flood zone, is underway.
http://www.zenataecocity.ma

BURKINA FASO
Yennenga, the new sustainable city

Yennenga, the name of a Burkinabé princess, is also the name of a new sustainable city being built 15 km from Ouagadougou. Built to ease demographic pressures in the capital, Ouagadougou, this new eco-city is designed in harmony with the local area and with control of climatic conditions. The buildings are being arranged to control the Harmattan, a dry and warm wind from the North and to guide the movement of the southern monsoon winds to provide cool air. A solar power plant with a capacity of 270 MW will be built to supply the city and the water consumed will come from a rainwater and dew recovery system. With a surface area of 678 ha, the city is being built for a population of 80,000 people.

www.architecture-studio.fr

UNITED STATES
Columbus, Ohio, at the forefront of modal planning

Since 2017, Columbus, the 2015 winner of the Smart Cities Challenge organised by the US Department of Transportation and financially supported by Paul G. Allen Philanthropies, has launched the pilot phase of an ambitious smart and sustainable mobility plan. This plan is expected to make the city a futuristic modal node based on nine projects including data collection, the deployment of a fleet of electric vehicles and terminals, an open-data management system and enhanced assistance for people with disabilities and transport for pregnant mothers. In order to decarbonise its transport, the city is also planning to install 1.2 TWh of renewable energy, and save up to 480 GWh by 2030. The public deployment phase will start in April 2019.

https://smart.columbus.gov/

ALBANIA
Tirana inaugurates the largest pedestrian zone in the Balkans

Since June 2017, a huge space has been reserved exclusively for pedestrians in central Tirana. Skanderbeg Square, formerly a gigantic roundabout, stretches over 10 ha surrounded by a green belt of 12 wooded gardens. This pedestrian zone has improved air quality in this smog-plagued urban area, while returning the city to its inhabitants who can go there and take part in the 90-odd events already organised since its inauguration. A place of history, this strongly symbolic project is helping to transform the way public space is designed in Albania. The initiative won the European Award for Urban Public Spaces in 2018.

http://www.tirana.gov.al/

INDIA
West Bengal, New Town, the green city

On the outskirts of Calcutta, "New Town", a new city with a surface area of 28km2 was recognised as a Green City by the Indian Gold Building Council in August 2018, thanks to its many facets of ecological development: cultivable plants, eco-design of buildings, waste collection by electric trucks, soft mobility, as well as several parks, including a 2km² "Eco-Park". Certified a "solar city" (10% renewable energy, LED street lighting), the city had nearly 190 sustainable construction projects in 2017. As a "Happy City", there is a special focus on the well-being of its inhabitants (events, recreation areas, safety), and the integration of gender in urban planning. It is one of the first Smart Cities of West Bengal.

https://www.nkdamar.org

ENERGY PRODUCTION

The price competitiveness gains of recent years - especially solar energy - combined with the rise in carbon prices, which in 2018 reached their highest level in a decade in Europe, have created favourable conditions for investment in energies with little or no CO_2 emissions (Guardian 2018). While renewable energies (excluding large hydropower plants) accounted for more than two thirds of net installed capacity worldwide in 2017, including 54.5% solar, they now account for 10.4% of global electricity consumption, compared to 10.1% in 2017. Worldwide, cities and communities are seizing these opportunities to transform local electricity generation.

Local authorities are playing a key role in the decentralisation of energy production and management systems. Relocating generation closer to consumption units not only increases the energy security of isolated areas, but reduces indirect emissions linked to energy transmission. Furthermore, the decentralisation of energy systems facilitates connections between infrastructures and minimises losses and costs for the consumer. These needs benefit the global micro-network market, which has grown considerably in recent years (GOGLA 2018). By acquiring a hybrid micro-grid, the remote mining town of Coober Pedy in Australia has managed to drastically reduce its dependence on fossil fuels. Such projects, which are inexpensive and easy to install, are on the rise in Africa, taking advantage of significant solar potential. Some cities exposed to conflict or natural disasters are also opting for off-grid installations based on renewable energies to increase their resilience. For example, Higashi Matsushima, Japan, which was affected by the 2011 tsunami, now produces 25% of its own electricity locally (Japan Times 2017), while in the Philippines, which regularly faces storms and typhoons, the Village of Paluan has the largest solar mini-grid in Southeast Asia.

Furthermore, the development of new technologies to enhance the value of municipal resources provides communities with new levers for locating sources of electricity. In particular, biogas produced by anaerobic digestion has long provided an alternative to waste incineration, and can be recovered for electricity or heat. In Portugal, for example, Vila Nova de Gaia is currently hitting its 2020 emission reduction targets particularly through broad coverage of its energy needs using biogas produced from household waste.

In parallel with the use of energy micro-grids, cities with district heating and cooling networks, especially in the northern hemisphere, are experimenting with a wide range of alternatives to fossil fuels. Scandinavian cities such as Helsinki and Copenhagen, which recover wastewater or waste for heat production, have long been in the vanguard of such initiatives. But other cities are also innovating; again in Finland, Ristiina has launched a hybrid thermal grid combining biomass and solar. In search of waste energy that can be harnessed to power its heat networks, Stockholm is now using the heat produced by the cooling circuits of the city's huge data centres on an unprecedented scale (BBC 2017).

PORTUGAL
Vila Nova de Gaia produces one third of its power locally

FRANCE
In Capelle-la-Grande, green hydrogen is being injected into the natural gas grid

BELGIUM
A Belgian solar energy investment cooperative in Mouscron

FINLAND
A hybrid thermal grid in Ristiina

TURKEY
Istanbul, a turbine produces energy from traffic

INDIA
State of Chhattisgarh: 900 electrified centres thanks to solar panels

CHINA
Chongqing/Yunnan/Sichuan/Guizhou, group their hydroelectric plants

AUSTRALIA
70% renewable energy for the Coober Pedy hybrid micro-grid

TURKEY

Istanbul, a turbine produces energy from traffic

Turning Istanbul's highways into a renewable energy source – this is the ambition of Deveci Tech, a start-up which has set up the first vertical-axis wind turbines along the BRT Metrobüs route. Installed along the roadside, the propellers are moved by the air currents produced by the passing vehicles and power a turbine. The turbines boast an electricity generation capacity of 1kW per hour and are fitted with sensors to measure the temperature, humidity and pollution of the city. This information is transmitted to an intelligent platform. The first wind turbines are in the testing phase and the project plans to install a total of 300 on this highway. In August 2018, these wind turbines, named "Enlil", won the Climate Launch Pad Award for Turkey.

http://devecitech.com/

FINLAND

A hybrid thermal grid in Ristiina

In spring 2017, a hybrid thermal grid was created in Ristiina, in the Mikkeli conurbation. It combines wood chip combustion with 8% solar generation in summer, within a single plant. A storage tank containing 3,000 litres of thermal fluid acts as a heat accumulator, for use during peak consumption, and keeps prices competitive by limiting demand pressure. The transition to this low-carbon energy source has led to savings of 290,000 litres of fuel per year for homes and municipal buildings formerly powered by oil or electricity. The initiative received the 2017 "Innovative Solution" award at the Celsius City Awards.

http://celsiuscity.eu/celsius-awards-2017/

FRANCE

In Capelle-la-Grande, green hydrogen is being injected into the natural gas grid

This is a first in France: "Power-to-gas", a technology that is used to recover renewable energies by injecting them into existing gas grids, has been implemented in Capelle-la-Grande, a commune close to Dunkirk. Hydrogen can be used to supplement intermittent renewable energy sources. It is used to store energy, especially when it is surplus, and to recover it by injecting it into the natural gas grid, at a proportion of 6% to 20%. This project, coordinated by Engie, involves a two-year evaluation of the proper operation and suitability of the use of this innovative technology. A hundred dwellings and a health centre are benefiting from this technology, and it is planned to adapt a bus station to this mixture.

https://www.engie.com/innovation-transition-energetique/pilotage-digital-efficacite-energetique/power-to-gas/projet-demonstration-grhyd/

INDIA

State of Chhattisgarh: 900 electrified centres thanks to solar panels

In India, where nearly half of all health centres are without electricity, the state of Chhattisgarh is an exception. CREDA, the renewable energy development agency in Chhattisgarh, has managed to electrify 90% of the health centres, developing a cumulative capacity of 3 MW. The installation of solar panels, combined with the energy efficiency of the fittings (LED lamps, vaccine refrigerators, microscopes) is enabling 900 centres to operate 24 hours a day, while ensuring better quality of care for the 80,000 daily patients. As an example of Good Practice, the programme was awarded the Ashden Award for "Sustainable Energy and Health" in 2018.

https://www.ashden.org/winners/

CHINE

Chongqing/Yunnan/Sichuan/Guizhou, group their hydroelectric plants

In Southwest China, grouped together on one of the last undammed rivers, 95 small-scale "run-of-the-river" hydropower plants (0.1 to 14 MW) are producing 769,396 MWh/ year. This initiative secures energy 24 hours a day in this remote region and thus controls erosion and deforestation by limiting the use of firewood, while reducing emissions (5.9 million tonnes of CO_2 saved between 2009 and 2018). The grouping of the individual developments enabled access to carbon finance, with revenues allocated to training courses (plant maintenance, fruit tree cultivation) and educational programmes.

www.southpole.com

PORTUGAL

Vila Nova de Gaia produces one third of its power locally

In 2017, 28,585 MW of electricity was generated by the medium-sized city of Vila Nova de Gaia (312,000 inhabitants) in northern Portugal. The recovery of the biogas produced by the city's waste enables it to cover 33% of its energy needs. A single generator was installed at the start of the project in 2004 and the plant now has seven, producing 1 MW each. A heat recovery system also heats buildings near the plant. In 2017, 13,758 tonnes of CO_2 emissions were avoided. A signatory to the Covenant of Mayors since 2008, Vila Nova de Gaia is on track to fulfil its commitment to reduce its GHG emissions by 20% by 2020.

https://www.renewables-networking.eu

BELGIUM

A Belgian solar energy investment cooperative in Mouscron

Under the impetus of the Mouscron district council and thanks to the involvement of its citizens, COOPEM, a citizen energy cooperative, is a first in Belgium. With 55% citizen ownership, plus the city council (15%) and two partner companies (30%), COOPEM has led to reduced prices and technical support for the installation of solar equipment. The cooperative is also assisting the companies it supports by offering them "lease" finance. At the end of 2018, COOPEM had 90 installations in Mouscron, a signatory to the Covenant of Mayors since 2012 and a member of Energy Cities since 2013.

http://www.energy-cities.eu

AUSTRALIA

70% renewable energy for the Coober Pedy hybrid micro-grid

Due to its remote location, this mining town in South Australia has long relied on diesel to produce its electricity independently. As of 1 July, 2017, the Coober Pedy Hybrid Power Project has been combining the generation of 4MW of wind, 1MW of solar and a 500kWh battery with the existing grid, thus significantly reducing diesel consumption. Since October 2017 the grid has operated entirely on clean energy 50% of the time. This hybrid system, an innovative solution for the electrification of an off-grid community, aims to reduce diesel consumption by 70% over its 20-year project life-cycle.

http://www.cooberpedy.com/ renewable-hybrid-project/

WASTE & CIRCULAR ECONOMY

In 2016, more than 2 billion tonnes of solid waste were produced by cities around the world, a figure that could grow by 70% with the effects of urbanisation and the growth of the middle classes by 2050. Waste in all of its forms, from its production to its degradation, is a major source of emissions, especially methane. If waste is taken as a whole - e.g. including categories such as wastewater - together with its processing, the energy used for collection, treatment, destruction and recovery accounts for 3 - 5% of GHG emissions worldwide. Waste is more often than not the responsibility of local authorities and with their citizens are often proactive in transforming lifecycles and treatment towards circular models, with waste issues often being a gateway to environmental awareness.

Last year was marked by global growth in restrictions on plastics, recently identified by the University of Hawaii as emitting ethylene and methane (UNEP 2018). Different strategies are underway. In India, the state of Mahārāshtra is still struggling to implement one of the largest single-use plastic bans in the world, while other approaches - such as the Chicago plastic bag tax - have been met with real success. The shared objective is to combat upstream waste generation, through restrictive or incentive mechanisms, by targeting particular materials or certain objects whose use is widespread but avoidable. Another example is the Freiburg cafés required by the council to replace disposable cups with eco-cups (deposit) that consumers can keep or bring back. The multiplication and success of eco-citizen operations, such as beach cleaning initiatives - the largest in the world ended in Mumbai in September 2018 - or the rise of "*plogging*" - picking up litter while jogging - also contribute to awareness raising and reinforce the social bond around an issue of protecting public assets.

Far from being a burden to municipalities, recovered waste is a valuable resource to help communities meet their needs. The first waste-to-energy station in Africa, which collects the heat emitted during incineration to produce energy, was inaugurated in summer 2018 in Addis Ababa. The development of methanisation has made it possible to produce biogas through the anaerobic digestion of organic waste and supply homes with energy. The village of Houègbo in Benin has taken up this technological opportunity to encourage citizens to collect their waste at the same time. Such measures improve the integration of the local agricultural and industrial eco-systems with urban activities. In this way, in Santiago, the circular treatment of wastewater and sewage sludge by three "*biofactories*", launched in 2017, produces energy for factories, construction material and irrigation water for farming.

A significant proportion of emissions related to waste treatment originates from the pollution generated by chartered waste collection trucks. This is why cities are increasingly deciding to green their fleets - for example Melbourne, where waste trucks have been running on hydrogen since 2017, or even finding automated alternatives. Although still expensive, automated pneumatic waste collection systems, invented in Sweden in the 1960s, would reduce the number of waste trucks by 90% and are attracting more and more cities, such as Bergen in Norway which opened the largest installation of this type in the world at the end of 2016.

GERMANY
Freiburg, the success of reusable and returnable cups

FRANCE
Besançon, compost in the city, it's possible

JORDAN
Karak, first steps towards the circular economy

INDIA
Chennai, the municipalities of Tambaram and Anakaputhur team up with a cement plant to recover plastic waste

GUATEMALA
San Pedro La Laguna, the zero plastic Mayan city

ETHIOPIA
Addis Ababa, the first waste-to-energy station in Africa

CHILE
In Santiago, water treatment based on a circular economy model

BENIN
In the village of Houègbo, waste against biogas

WASTE & CIRCULAR ECONOMY

AROUND THE
WORLD IN 80
INITIATIVES

GUATEMALA

San Pedro La Laguna, the zero plastic Mayan city

In 2017, 80% of the 14,000 inhabitants of this Mayan city banned plastic from their daily lives. Since 2016, a city council law passed by a majority has outlawed the use of plastics and punishes traders who offer them with a fine of about $2,000. This initiative aims to preserve Lake Atitlán, and has encouraged a return to ancestral and sustainable practices: use of cloth napkins, woven baskets or banana leaves. The city has also set up its own recycling system. The city is determined in its commitment towards the sustainable transition and is also planning to include environmental courses at school and review its wastewater treatment system.

www.unenvironment.org

GERMANY

Freiburg, the success of reusable and returnable cups

In 2018, more than 60% of Freiburg's cafés are using the "Freiburg Cup", a reusable cup which limits the waste associated with disposable cups (2.8 billion discarded per year in Germany). Initiated by the city in November 2016, customers of participating cafés can choose to be served in reusable cups for a deposit of EUR 1, repaid to them when the cup is returned to one of the cafes in the scheme. Today, the large number of participating businesses is a sign of the success of the initiative and makes the process easier for customers. 26,000 cups have been provided and they can be used up to 400 times. A world first when it was launched, the initiative has already been replicated in Munich and Sydney (Australia) in August 2018.

www.zerowasteeurope.eu

ETHIOPIA

Addis Ababa, the first waste-to-energy station in Africa

Inaugurated in August 2018 following four years of work, this waste-to-energy and electricity generation plant will supply 25% of its energy to the Ethiopian capital, sustainably burning 1,400 tonnes of waste a day. This is the first waste-to-energy station on this scale in Africa and it will respond to the worrying problem of waste in this city of 4 million inhabitants with rampant population growth. Until this station, Addis Ababa had only one open dump, Koshe, where more than 110 people died during a landslide in 2017. The project, in partnership with the Ethiopian government and an international consortium of engineers, involved an estimated investment of USD 118 million.

https://www.africawte.com/

BENIN

In the village of Houègbo, waste against biogas

Since its opening in late 2017, the Houègbo village waste management centre has been receiving household organic waste for conversion to biogas under a contract with residents for daily delivery. In return, they receive money, a credit, or a bag of provisions. With the support of the Swiss ReBin Foundation, this 1.3 ha centre has converted 6 tonnes of waste into 200 m³ of biogas every week. It plans to produce 400 tonnes of organic fertiliser and duplicate the project in 77 municipalities. Following prospecting for the installation of a centre in Ghana and Togo, the village was chosen due to the particular enthusiasm of the inhabitants.

www.sciencesetavenir.fr

FRANCE

Besançon, compost in the city, it's possible

In 2017, 743 tonnes of biowaste were composted in Besançon, by individuals and local authority facilities. Due to the limited space available to families in urban areas, public composting sites have been installed (312 outside buildings and 11 composting cabins in 2017). More than 70% of the population is served by this decentralised composting system. These good results are the outcome of the revision of the entire waste policy of Besançon by its mixed syndicate SYBERT, to move away from incineration and reduce waste. In total this has resulted in a 30% decrease in residual household waste.

www.zerowaste.eu

INDIA

Chennai, the municipalities of Tambaram and Anakaputhur team up with a cement plant to recover plastic waste

In order to limit the amount of plastic sent to landfill, in July 2018 a plastic waste recovery agreement was signed between these two municipalities in the south of the city of Chennai and the TANCEM cement plant. The municipalities meet the costs of sending plastic waste, sorted by residents, to the cement plant every week. Incentives to reduce the use of plastic are also being developed, and residents are being asked sort organic waste: families are encouraged to adopt vermi-composting, and larger organisations to install biogas equipment. Currently, about eight tonnes of plastic waste are sent to the cement plant every week.

Tancem.com

JORDAN

Karak, first steps towards the circular economy

Prior to the implementation of this initiative, every day the city of Karak sent more than 120 tonnes of waste to a landfill 35 km from the city, with a very low, only informal sorting rate. With the establishment of a cardboard and paper recycling and reuse centre, the city is now saving 730 tonnes of waste per year and two waste truck journeys per day. The council has also invited residents to sort paper, cardboard and plastic through waste awareness campaigns.

www.connective-cities.net

CHILE

In Santiago, water treatment based on a circular economy model

In Santiago de Chile, all wastewater is treated by three bioplants, launched in 2017. The plants operate on circular economy principles and are managed by the Aguas Andinas company, in partnership with Suez. They transform sewage sludge into energy for their own operation and for the grid (49 GWH of electricity, 177 GWH of natural gas, 84 GWh of thermal energy) and convert 137,000 tonnes of solid waste into fertiliser for farmers.

In 2005 only 3.6% of wastewater was treated, while the rest was discharged freely into the Mapocho River. By contrast, 300,000 tonnes of sewage sludge are now treated, which is enabling the recovery of the biodiversity of this water course. The facilities won the UN Climate Action Award 2018.

https://unfccc.int

BUILDINGS

By signing the Net-Zero Carbon Building Declaration, in August 2018, 19 of the C40 cities committed to ensuring that any new buildings will be carbon neutral by 2030. Many practices already tested by cities around the world can inspire decision-makers to achieve these goals. The potential for reducing emissions is enormous - buildings today account for 50% of a city's emissions, and up to 70% for cities such as London, Los Angeles or Paris. As the world's population becomes more urbanised, city inhabitants are spending more and more time inside buildings, the smallest unit of life and activity and the focal point of any urban energy system (WRI 2018). Cities have the action and planning levers, under state regulatory frameworks, to bring about convergence in the efforts of the sector around two priorities: renovation and improvement of the energy performance of existing buildings and ensuring that new buildings are carbon neutral.

First, it is essential for cities to develop their knowledge of the energy efficiency potential of their areas by equipping themselves with powerful information tools. This can be achieved, as in the Changning district of Shanghai (WRI 2017), by setting up a data collection platform on the energy efficiency of buildings or by mobilising sector stakeholders. Bringing together architects, residents, energy suppliers … and creating synergies to improve the energy efficiency of buildings: this is what both Tampere and Sydney did in 2017, thanks to stakeholder consultation (cooperatives, platforms, etc.) (Energy Cities 2017).

By proposing ambitious programmes built into local and national climate plans, Canadian cities are at the forefront of the future of construction. Last year Toronto adopted an action framework for planning the lower thermal energy intensity and emissions of buildings. The city has also re-evaluated its eco-construction standards to bring them into line with its long-term objectives, to ensure that each new building has a neutral or positive carbon footprint, by producing at least as much energy as it consumes. In Vancouver, energy-efficient designs, such as passive constructions, are now facilitated by incentives, practical toolboxes and the city council's vote on reforming the urban planning code that came into effect last year.

However, commitments for future constructions will not, on their own, be sufficient to ensure the decarbonisation of urban buildings. The greatest challenge remains the energy renovation of old buildings. In order to help city residents and businesses overcome financial obstacles to the renovation of old post-war buildings, this year Belgrade launched a Fund for Energy Efficiency, drawing inspiration from the Riga model (Balkan Green Energy News 2017). Beginning this year with the Renew Boston Trust, a major programme to renovate public, commercial and multi-family housing, Boston is also looking to direct private real estate investment flows for more renovation and energy efficiency projects. In addition to the financial element, technical support programmes for private individuals are being implemented, such as the Rénov'Énergie device in Montpellier.

In addition to providing the regulatory framework and channelling funding, many technological innovations offer simple solutions for adaptation to urban warming and mitigating building emissions. "Cool roofs", for example, reflect the sun's rays, thus keeping the interior of buildings cool and limiting the use of automated ventilation systems. For example, in India, where the population density and air pollution exacerbate the effects of heatwaves, Ahmedabad and Hyderabad introduced programmes to install cool roofs in residential buildings in 2017 and 2018.

SPAIN
*Madrid,
Plan Madrid
Recupera*

BELGIUM
*In Mons,
Project 55, "zero
energy" heritage
renovation*

NORWAY
*Drøbak, 1st
"Powerhouse"
standard
school*

FINLAND
*Tampere -
Tampere Plus
(TARMO +)
Low Carbon
Housing*

MAURITANIA
*Village of Diakré -
First village entirely
built in a
Nubian vault*

INDIA
*3,000 cool
roofs in
Ahmedabad*

CHINA
*Shanghai,
Changning District.
Big data at the
service of the energy
performance of
buildings*

AUSTRALIA
*Sydney,
better building
partnership*

MAURITANIA

Village of Diakré - First village entirely built in a Nubian vault

Since 2017, the village of Diakré has become the first Mauritanian village built as "Nubian vaults". This architectural technique mainly uses locally available raw earth, with no wood, thus reducing deforestation. Adapted to Sahelian populations, it also offers robust resistance to bad weather. Located on the banks of the Senegal River, this village consists of 51 private houses, a mosque, a literacy room and a maternity ward. The 54 projects over three years have enabled the employment and training of 61 apprentices. The Voûte Nubienne association, which operates in five West African countries, has saved 75,000 Teq CO_2 since the start of the programme in 2000.

www.lavoutenubienne.org

INDIA

3,000 cool roofs in Ahmedabad

In May 2017, as part of its heatwave action plan, the municipality of Ahmedabad converted 3,000 roofs into cool roofs in six poor neighbourhoods. This technique, which involves painting the roofs with a clear and reflective coating (a very economical lime mixture), lowers the interior temperatures by 3 to 5°C in this arid zone where temperatures can reach 42°C. The mayor of the city inaugurated the initiative himself, supported by a commitment from the private sector to provide the painting for free and 50 student volunteers. In 2018, 20 to 25 construction agencies committed to offer cool roofs for private buildings with the support of the city council, which is also beginning the transformation of municipal buildings.

www.nrdc.org

NORWAY

Drøbak, 1st "Powerhouse" standard school

A "Powerhouse" is a positive energy building, producing more energy than the total amount consumed during its life cycle. This standard was established by a coalition of Norwegian building companies (development company, architectural firm, consulting firm, etc.). In February 2018, it was used in the construction of the first "powerhouse" school, producing 30,500kWh/ year. The coalition also worked on the world's first positive-energy building renovation, Kjørbo, reducing its energy demand by 90%. The coalition is now developing internationally, with the "Harvard Housezero" project: the renovation of a university building into a Powerhouse.

Powerhouse.no

BELGIUM

In Mons, Project 55, "zero energy" heritage renovation

Certified a passive building in 2017, Project 55 is the renovation of a heritage registered mansion under the "zero energy" standard: eco-materials, sustainable water management, PV panels, aquaponics etc. As the first renovated tertiary building of this type in Belgium, it proves that it is possible to renovate a building to demanding environmental standards, using simple techniques, to make this renovation easily reproducible. Project 55 won the Sustainable Renovation Grand Prix at COP23.

https://www.construction21.org

FINLAND

Tampere - Tampere Plus (TARMO +) Low Carbon Housing

The TARMO + project, funded by ERDF and managed by the Tampere Energy Agency, supports low-carbon and low-consumption solutions for 250 cooperative residential housing units over a three-year period (2015-2018). In particular, it has provided for the training of a designated "Energy Expert", a resident in each cooperative housing unit, and promotes stakeholder collaboration (housing companies, energy suppliers, residents) through events (27 in 2017), workshops (five in 2017) and highlighting good practices on a project-dedicated platform. This project, labelled "URBACT Good Practice" in 2017, supports climate strategies implemented at the local, national and European level (Blueprint 2020).
http://urbact.eu

SPAIN

Madrid. Plan Madrid Recupera

Since June 2016, the Madrid Recupera Plan ("Mad-Re") has allocated an accumulated budget of nearly EUR 75 million to the regeneration of residential buildings in inner-city and suburban districts vulnerable to climate change. As a priority of the elected municipal council in 2015, the programme, which ended on 21 October 2018, co-financed, to a maximum of 60% and EUR 8000, work by individuals to improve accessibility and energy efficiency and renovate and remove asbestos from buildings. Selected based on social, economic and environmental criteria, more than 590,000 precarious, old or non-standard dwellings, covering nearly 43% of the population, were eligible for the programme in 2017.
https://planmadre.madrid.es/

AUSTRALIA

Sydney, better building partnership

Steered by the city council, the Better Building Partnership brings together homeowners, industrialists and any stakeholder involved in the performance and sustainability of existing offices and commercial spaces in Sydney. Covering more than half of the city's commercial spaces, the BBP has led to an increase in the performance of buildings: renewable energies, insulation as well as waste and wastewater reduction, resulting in a 52% reduction in emissions and 43% reduction in energy consumption compared to 2006. In 2017, the emission of 1.1 million tCO$_2$eq was avoided and the BBP is on track for zero emissions. In June 2018, based on this multi-stakeholder collaboration model, the city launched the Sustainable Destination Partnership, bringing together tourism development stakeholders.
www.betterbuildingspartnership.com.au

CHINA

Shanghai, Changning District. Big data at the service of the energy performance of buildings

Participating in the China Better Building Challenge and the C40 China Buildings Programme, the Changning District - 700,000 residents at the heart of Shanghai's business centre - promotes the energy efficiency of its public buildings. An energy consumption data collection and monitoring platform tracks the energy performance of 160 of its 165 public buildings and has led to the renovation of 32 buildings, with an average energy saving of 20%. Furthermore, in mid-2017 the district council allocated a grant in excess of USD 3 million to energy renovation, providing a leverage effect in the private sector which invested USD 20 million in the improved energy efficiency of buildings.
www.wri.org

FORESTS

Given the urgency of climate change and the extent of the degradation of eco-systems and forest areas, which sequester about 2 billion tCO$_2$/ year (FAO 2018), which play a key role in climate stabilisation scenarios, especially in the most recent IPCC report on the possibilities of limiting global warming to 1.5°C. However, at the same time, anthropogenic deforestation and its multiple causes are reducing forest cover and generating emissions. The solutions being researched range from the fight against illegal logging and the uncontrolled expansion of agricultural land to afforestation and the conservation of canopy covers in urban and rural environments. While states have multiplied their international commitments in recent years (New York Declaration, Bonn Challenge, etc.), at GCAS 2018, 45 major cities created a new action coalition - Cities4Forests – for the conservation and restoration of forests both near and far from urban centres. Major projects have been associated or driven by local and regional governments and local communities in recent years.

Tropical forests are the most affected by deforestation, with the disappearance of 15.8 million hectares in 2017, the second largest year of loss of forest cover (Global Forest Watch 2018). At the international level, reforestation initiatives in fragile areas are the focus of a concentration of political and financial resources. For example, the Indian state of Madhya Pradesh has set the record of mobilising 1.5 million volunteers to plant 66 million trees in 12 hours. In Pakistan, the region of the new President Imran Khan also managed to restore 350,000 ha of forests between 2014 and 2017. Relying on local communities, the devolution of management powers and the recognition of the rights of indigenous peoples are therefore regularly cited as a major challenge for the implementation of forest management consistent with the Sustainable Development Goals. While the institutionalisation of these governance rights remains very rare, initiatives are moving in this direction with the support of international NGOs. For example, the ICCO and the WWF, respectively, have enabled the Mayangna people's government of Nicaragua and the fishing communities of Manambolo in Madagascar to develop tools for managing their forest resources in a decentralising environment. In the latter case in particular, the focus is on mangroves which, like peat bogs, are ecosystems that are highly fragile while rich in biodiversity and with a very high carbon absorption capacity.

Cities are increasingly involving themselves in forest health, especially to stabilise water resources as their quality depends on the condition of the soil and vegetation of drainage basins, but also with the aim of reducing air and local pollution. For example, in Alicante, the development of urban forests is now part of city planning strategies as urbanisation advances (see theme 1). Mexico is developing its forest space mapping tools with Global Forest Watch, while in Indonesia in 2019 the Papua region will benefit from an atlas of deforestation and industrial plantations similar to the one developed this year by CIFOR in Borneo.

MEXICO
In Mexico, open data used to monitor protected forests

BRAZIL
In the State of Pará, agroforestry is being developed for cocoa farming

SPAIN
Alicante, replenishing the forest of Mont Benacantil

INDIA
Madhya Pradesh, 1.5 million volunteers plant 66 million trees in 12 h

SOUTH AFRICA
Ethekwini, reforestation around the Buffelsdraai landfill

MADAGASCAR
In Manambolo Tsiribihina, local communities are restoring mangroves

KENYA
Gazi Bay - "Mikoko Pamoja", restoring mangroves using carbon credits

PAKISTAN
Khyber Pakhtunkhwa province, the "billion tree tsunami"

FORESTS

PAKISTAN

Khyber Pakhtunkhwa province, the "billion tree tsunami"

In August 2017, the "billion tree tsunami", a massive reforestation project in the mountainous province of Khyber Pakhtunkhwa, passed its goal of one billion trees. The project, initiated in 2014 by the governor of the province, former sportsman Imran Khan, with investment of USD 169 million, has enabled (through natural regeneration or planting) the restoration of 350,000 ha of forest. The opening of 13,000 private nurseries has also created thousands of jobs. The province's commitment in March to develop an additional 252,000 hectares was the first sub-state commitment to the "Bonn Challenge". The major impact of this success also triggered a national reforestation campaign: "Plant for Pakistan".

www.weforum.org

SOUTH AFRICA

Ethekwini, reforestation around the Buffelsdraai landfill

Between 2008 and 2017, this community-based reforestation project enabled the city to plant 709,124 trees of 72 different species around the Buffelsdraai landfill. As an adaptation and mitigation initiative, it creates a "buffer zone" around the landfill to limit the risk of fires while protecting biodiversity and offsetting the carbon impact of the city. Its community-based approach has led to the creation of more than 500 jobs, including tree-preneurs (tree entrepreneurs) - who sell seedlings for the project. In the long term, more than 42,000 tonnes of CO_2 will be sequestered over 20 years. Inspired by this success, the city has already developed two other similar projects.

http://www.durban.gov.za

SPAIN

Alicante, replenishing the forest of Mont Benacantil

This project, initiated by the city's Department of the Environment, aims to regenerate the forests of Mont Benacantil by repopulating it with pines of different ages, to recreate the natural condition of the forest. Cartagena cypress and tetraclinis conifers have been selected for their adaptation to the environment. Two viewing points have also been created and trails have been refurbished for easy access. The runoff areas have also been controlled by the construction of small stone walls. Phase I of the project was completed in 2017.

https://naturvation.eu/nbs/alicantealacant/benacantil-vegetation-restoration-project

KENYA

Gazi Bay - "Mikoko Pamoja", restoring mangroves using carbon credits

In Gazi Bay, two villages (Gazi and Makongeni) have joined forces for the preservation of the mangrove swamp by exchanging nearly 3,000 CO_2 teq of carbon credits. The first community initiative of its type, the profits so far have made it possible to preserve 117 ha of mangroves. This system also ensures regular revenues used to provide access to water for 3,500 inhabitants or to buy school supplies for 700 school children. In 2017 this project received the "Equator Initiative" award, and is being replicated in other regions in Kenya.

www.equatorinitiative.org

MADAGASCAR

In Manambolo Tsiribihina, local communities are restoring mangroves

Between 2015 and 2018, under the leadership of WWF, local communities in the Menabe and Malaky regions conducted a vast mangrove restoration campaign in the Manambolo Tsiribihina delta. A total of 150 ha was restored and more than 930,000 mangrove propagules were planted by youth and fishermen's community associations who depend on this rich and fragile eco-system that prevents coastal erosion and absorbs a lot of carbon. To anchor the protection of mangroves as locally as possible, the WWF is also encouraging the management of 8,000 ha of mangroves by Base Committees (COBA), empowered to manage natural resources through a transfer of state powers. A new phase of the project was opened in 2018.

https://www.wwf.fr

MEXICO

In Mexico, open data used to monitor protected forests

Mexico City's Environment and Land Management Agency (PAOT) has formed a partnership with Global Forest Watch, an open-data geo-spatial forest observation platform, to improve control and monitoring of forest cover losses. This partnership is providing Mexico with a precise and inexpensive mapping tool enabling it to control the 87,300 ha of "Forest Conservation Area" covering 59% of the city's surface area and threatened by illegal activities. The data collected is open to the public and stakeholders and provides policy makers with measurements of change in forest cover and technical data to support local policies. This initiative was recognised by the Reforestamos Mexico GWF Contest.

www.blog.globalforestwatch.org

BRAZIL

In the State of Pará, agroforestry is being developed for cocoa farming

In the municipalities of Tucumã and São Félix do Xingu - the most deforested in the Amazon - The Nature Conservancy is facilitating The Forest Cacao Project, a multi-stakeholder partnership to promote agroforestry among smallholder cocoa farmers. Technical support is provided with a focus on women's training and two instruments have been developed to improve production systems and decision-making: a registration portal to monitor deforestation and compliance with the Brazilian Forest Code and an information platform providing indicators and analyses for farmers and technicians. In early 2018, the project reported that it had trained 117 families in total since 2012, and aims to restore 22,000 ha of land in 2022.

www.iucn.org

INDIA

Madhya Pradesh, 1.5 million volunteers plant 66 million trees in 12 hours

This spectacular operation is a model of citizen mobilisation in order to achieve Indian commitments under the Paris Agreements. The government of Madhya Pradesh managed to mobilise more than 1.5 million volunteers on 2 July 2017 to plant 66 million saplings in 12 hours - a new world record. The diversity of species planted - more than 20 - is considered beneficial for enhancing the absorption potential of future forests.

www.independent.co.uk

FOOD

Food insecurity has been increasing in recent years. Malnutrition has been climbing for three years, affecting 817 million people in 2017 (FAO 2018), while 2.1 billion people lack safe access to drinking water. At the same time, obesity is increasing - not only in northern countries - and 1.6 billion tonnes/ year or one third of the world's annual food output, accounting for 8% of global GHG emissions, are wasted throughout the value chain (FAO 2018, BCG 2018). These dysfunctions call for solutions to improve autonomy and local control of production and consumption and to reduce risks for the entire global food system.

The development of urban farming blurs the functional boundaries between urban and rural areas and accompanies the concentration of demand in cities caused by increasing urbanisation. With both manual work and technological innovations, the inhabitants of Seoul, Bogotá and Rotterdam are recovering unoccupied spaces and the verticalisation of buildings in cities to deploy small-scale agricultural initiatives. Nevertheless, the food consumption of large cities obviously remains dependent on rural communities. This is why enhancing the capacity of farmers is also a key focus of Medellín's food policy, in partnership with the FAO.

However, food security is not only a matter of stability and distribution of the volumes produced. It offers the potential for everyone to have access to healthy and nutritious diets. Many cities are beginning to roll out organic, vegetarian or light in meat kitchens (80% of GHG emissions from food), while the Indian state of Sikkim has become the world's first to convert all its farmers to the organic model. While the conversion of farmers sometimes raises difficulties, it also provides an opportunity to relaunch activity in remote areas, such as the village of Brachoua in Morocco, which is being revived thanks to permaculture.

Recent years have seen increased awareness that has spawned a multitude of initiatives in communities combating waste at different scales, for example, by penalising the waste of restaurants, as in Austin. One-off crises in critical areas can also provide opportunities for municipal services and citizens to adopt new resource-saving practices. For example, Cape Town's water shortage this year.

Finally, the impacts of climate change on food systems require that new ways be devised for the organisation and resilience of agricultural practices. This is the work undertaken in the climate-smart villages supported worldwide by the Consultative Group for International Agricultural Research (CGIAR). For example, in the village of Ma in Vietnam, a combination of local and exogenous knowledge is being deployed to take advantage of unpredictable climates and ensure local food security.

MOROCCO
Brachoua, revival of a village through permaculture

UNITED STATES
Austin bans food companies from throwing food away

NETHERLANDS
Rotterdam, the world's first floating farm

KOREA
Seoul City Council supports urban agriculture

COLOMBIA
Medellín, a plan for the territorial integration of food production

SOUTH AFRICA
Cape Town, a digital tool to improve the management of water networks

INDIA
State of Sikkim, the world's first 100% organic state

VIETNAM
Smart-agriculture transforms the village of Ma in Vietnam

FOOD

MOROCCO

Brachoua, revival of a village through permaculture

This village has emerged from poverty thanks to the development of permaculture. Four agricultural cooperatives were created and training in natural and organic farming techniques was delivered with the support of the Ibn-al-Baytar association. Several wells that were dug and nearly 40 vegetable gardens (compared to only one in 2013) are today providing food autonomy and a source of revenue for this village that once lacked everything: sales of products to neighbouring villages, development of eco-tourism, craft production by the women's cooperative, etc. The cooperative was chosen to exhibit its organic products at the Casablanca solidarity market, which opened in March 2017.

www.agrimaroc.ma

VIETNAM

Smart-agriculture transforms the village of Ma in Vietnam

In this village in northern Vietnam, farmers are practising smart agriculture to address food insecurity and climate change. With the support of the CIAT and the CGIAR, a basket of technologies and practices has been defined based on their replicability potential in the region. The farmers then chose the solutions they want to implement: intercropping cassava/ vegetables, cultivation of acacia for soil fertility, vermi-compost, production of flood-resistant rice, etc. The project, with 65% of mobilised participants being women, has made it possible to test several solutions at once in order to define the most suitable practices. At the end of the tests, 16 farmers agreed to train other farmers in these techniques.

ciat.cgiar.org

KOREA

Seoul City Council supports urban agriculture

Since 2011 and the election of Park Won-Soon as mayor, Seoul has been at the forefront of urban agriculture. In almost seven years, the number of urban farms and community gardens has increased sixfold and the city has set itself the goal of establishing 1,800 vegetable gardens in 2018, with investment of USD 46 million in the transformation of unused areas. In particular, the district of Gangdong-gu is seeking to provide every home with an urban vegetable garden by 2020, by making the most of the roofs of skyscrapers, schools, parks, etc. The district mayor is also funding courses and training to build on this momentum to revitalise and strengthen social bonds.

www.icleikorea.org

INDIA

State of Sikkim, the world's first 100% organic state

Since 2003, the State of Sikkim has been engaged in an ambitious agro-ecological transition and in 2017 managed to convert to organic production on all of its agricultural land. The small state is thus demonstrating the potential for meeting food security challenges by implementing alternatives to the intensive agriculture pursued in the Indian Green Revolution. In total, nearly 66,000 farmers have benefited from awareness-raising and training courses on organic farming practices. Simultaneously, the State has progressively banned pesticides and chemical fertilisers whose use, since 2016, can be punished with a fine of EUR 1,300 and three-months' imprisonment. Sikkim's success has been recognised with the 2018 Future Policy Award, awarded by the IFOAM, the FAO and the WFC.

www.fao.org

NETHERLANDS

Rotterdam, the world's first floating farm

In partnership with the company Beladon, the City of Rotterdam is preparing to open the world's first floating farm in Merwehaven harbour in 2018. It will house 40 dairy cows in an artificial pen, capable of producing 800 litres of milk a day. On the other two levels of the building, a workshop will produce dairy products and greenhouses will be used to produce food for the livestock. Organic waste from surrounding restaurants and cow manure will be recycled, rainwater will be collected and solar panels will feed hydrogen generation by electrolysis, to ensure the energy autonomy of the farm. The farm is storm-resistant and is a pilot project for food resilience in urban areas.

www.futura-sciences.com

SOUTH AFRICA

Cape Town, a digital tool to improve the management of water networks

Cape Town is plagued by permanent water stress, which resulted in a long water shortage in 2018. In addition to the rationing imposed on inhabitants, decreasing their daily water consumption from 600 mL in mid-2017 to 507 mL in April 2018, the city needs structural solutions to secure everyone's access to clean water. The Department of Water and Sanitation therefore formed a partnership with SAP Work Manager, a mobile platform to put agents involved in the installation, maintenance, inspection and repair of water sanitation and distribution infrastructures in contact with one another. This measure should facilitate the mobility of its agents, improve the resilience of the city and postpone "Day Zero", when the water distribution network would be brought to a halt.

https://www.thesouthafrican.com

UNITED STATES

Austin bans food companies from throwing food away

As part of its zero-waste plan for 2040, Austin, Texas, passed a "Universal Recycling Ordinance" on 1 October 2018. This regulation requires all food businesses, particularly restaurants, to "divert" their organic waste from landfills, while 40% of the waste found there is organic. Austin is offering these companies sustainable options, such as donating surplus food, composting leftovers or sending them to farms to feed livestock. Furthermore, companies shall train their employees in these practices, provide informative signage on their sites and post an annual organic waste diversion plan online.

www.austintexas.gov

COLOMBIA

Medellín, a plan for the territorial integration of food production

The department of Antioquia, the metropolitan area of Valle de Aburrá and the City Council of Medellín in 2017 launched an "Alliance for Good Living", a multi-level governance tool which aims to create a "City-Region Food System" under the FAO's Food for Cities programme. This system aims to strengthen social cohesion between the city and the surrounding rural municipalities and to ensure the food security of the region by promoting short distribution channels. The plan seeks to move away from Colombian productivist models towards healthier diets with a 15% increase in farmers' incomes while also reducing food prices by 15% together with a long-term plan for resilience and adaptation to climate change.

www.fao.org

TRANSPORT

The transport sector today accounts for 23% of GHG emissions worldwide, a 68% increase since 1990 (IEA 2017). They could even triple by 2050 in OECD countries. While cities are the source of half of these emissions, territorial mobility strategies are at the heart of the challenges. Among the thousands of initiatives being developed worldwide in an area that is often under the aegis of regional governments, we can identify at least some areas of intervention, particularly in the cities of the Southern hemisphere.

Car-free days, initiated at the end of 1956 in response to the fuel shortages caused by the Suez crisis, are now a real success in many large cities in the South, which have made them a regular occasion to raise the awareness of citizens. Kigali joined the movement in 2016 and Nairobi is announcing a similar initiative. In Bogotá, Quito and São Paulo they have been successfully implemented, while in August 2018 Jakarta launched an extended car-free day at ASEAN. Although the impact on GHG emissions is limited, car-free days help to spread new mobility practices that combine with questioning the domination of cars in cities.

The fight against air pollution is prompting more and more local elected officials to review the role of cars in city centres and to develop private and public modes of transport that produce fewer emissions. Brussels has banned diesel in the city, as has Hamburg, which relies on the support of the German Federal Administrative Court. Vehicles that are more than 20 years old are banned from the centre of Barcelona during the week, while Haifa became the first Israeli city to establish a Low Emission Zone (LEZ), and there are already 227 LEZs in 12 European countries (Ademe 2018). Changes in CO_2 and particulate emissions standards are also central to the debates, as in Quebec, which has undertaken an ambitious clean vehicle development programme under the ZEV standard. At the same time, the development of the supply of self-service electric vehicles is expanding the range of individual short trip mobility options for city residents. Cars, bicycles, motor scooters or scooters are encouraging new thinking on sharing public roads and travel modes in major cities. Public transport is also the target of greening: with 100% electric buses – a world first - Shenzhen this year became the flag bearer of electric public transport.

Furthermore, investments in the development or improvement of public transport infrastructure remain a crucial issue in a context that is often difficult for local finances. In recent months, Kochi, in India, has opened its first metro, which is partly solar powered, and Abuja, the capital of Nigeria, has acquired its first two lines. Meanwhile Abidjan's metro project is pending clarification. To respond to population growth and chronic congestion problems, large cities are also developing their public roads to facilitate access and the circulation of public transport. These systems, especially the Bus Rapid Transit (BRT), are undergoing major growth in South America and Asia. A pioneer in the area in South America, Buenos Aires is continuing to extend the lines of its Metrobús, which travel on dedicated lanes. Based on the model of the city of Pune, which has received many awards, Indian cities are multiplying their BRTs and are trying to steer a paradigm shift in modes of transport. Following the example of Sydney, which has developed a signage management system adapted to bus schedules and delays to improve public transport traffic, an increasing number of cities are using smart technology and big data to regulate traffic, optimise existing networks and plan urban traffic.

CANADA
In Quebec, a standard stimulates the supply of clean vehicles

UNITED KINGDOM
London taxis go electric

SWEDEN
Stockholm combines last stage of delivery with waste collection

CHINA
Shenzhen, the world's first city with 100% electric buses

ISRAEL
The city of Haifa defines a low emissions zone

RWANDA
Kigali. Car-free days

INDIA
Kochi inaugurates its new metro

INDONESIA
Jakarta launches its first bicycle sharing scheme

RWANDA

Kigali, Car-free days

Since summer 2016, two Sundays a month on the roads of Kigali are reserved for bicycles and pedestrians. This initiative, which has led to lower emissions, due to traffic decongestion, also promotes occasions dedicated to the well-being of the city's residents. The City Council has prioritised the promotion of better lifestyles by offering a range of group sports activities and by setting up booths offering free medical examinations. The initiative is very popular in Rwanda and is mobilising more and more participants and becoming an opportunity for mobilisation for the environment. For example, on 3 June 2018, a march against plastic pollution organised by the Ministry of the Environment was held during this day.

www.kigalicity.gov.rw

INDONESIA

Jakarta launches its first bicycle sharing scheme

Since July 2018, in the historic district of Monas, the city council of Jakarta has been providing its first bicycle sharing stations. A hundred bicycles, distributed over seven stations, are accessible through the "Gowes" application, which provides users with information on time and place and also the number of calories burned on their journey. All the bicycles are equipped with a security device to prevent theft, as well as a GPS system. This scheme, available free for the first three months, aims to reduce the use of cars in one of the most polluted cities in the world.

https://gowesin.id/

INDIA

Kochi inaugurates its new metro

The Kochi metro system was commissioned in June 2017. Built at height and extending for 13 km, the KMR (Kochi Metro Rail) has capacity for 975 passengers per train, significantly reducing congestion. 25% of its power is provided by solar panels located on the roofs of the 22 metro stations, with a total capacity of 4 MW. In July 2018, the KMR also inaugurated a bike sharing scheme, with stations located at the foot of the metro, to facilitate the interconnection of transport modes. A first extension of the network was agreed this summer and the metro must eventually be extended to 25 km.

https://kochimetro.org/

UNITED KINGDOM

London taxis go electric

Since January 2018, an electric version of the iconic London taxi has been operating on the streets of the city. In March 2018, the LEVC (formerly the London Taxi Company) launched a new production plant for a clean version of the "black cab", the London taxi. This change accompanies a new regulation that came into effect in London in January 2018, requiring all new taxis to be zero or low emission vehicles. The Mayor's Office is subsidising the purchase of these new models and is planning to install 150 new charging points in 2018, then 150 more by 2020. Following this success, the LEVC will begin exporting its production, to Germany in particular.

https://tfl.gov.uk

CHINA

Shenzhen, the world's first city with 100% electric buses

Since the end of 2017, the whole of Shenzhen's bus fleet - 16,359 vehicles - has been replaced by electric buses. This is the world's first city to adopt a completely electric fleet of buses. The transition took place quickly: in 2015, the city had only 4,877. The bus model is optimal for this large city - 5 hours' charging provide nearly 250 km of travel, sufficient to cover needs for one day. This initiative has also led to a reduction in the city's emissions of 1.35 million tonnes of CO_2 each year. For Shenzhen the next step will be to do the same for its taxis, 63% of which are currently electric.

https://www.wri.org

CANADA

In Quebec, a standard stimulates the supply of clean vehicles

Since 11 January, 2018, Quebec has been the first Canadian region to have implemented a ZEV (zero emission vehicles) rule. Manufacturers are required to produce a mandatory number of ZEVs for the Quebec market, through a complex system of credits calculated based on the number of these vehicles sold as a proportion of the total sales of each manufacturer. The rule therefore aims to boost the supply of clean vehicles and the development of new models. In 2018, the ZEVs will be required to reach 3.5% of sales. This rate will progressively increase to 22% of sales in 2025.

www.mddelcc.gouv.qc.ca/ changementsclimatiques/vze/

ISRAEL

The city of Haifa defines a low emissions zone

Since 2 February 2018, polluting diesel vehicles weighing over 3.5 tonnes have no longer been allowed in the centre of Haifa, unless they have a special filter permitting entry to this low emission zone. Approximately 22,000 vehicles are affected by this restriction. The measure, which is the first of its kind in Israel, is only a first step: from 2019, the restriction will be extended to all diesel commercial vehicles. The initiative is part of a larger programme to reduce pollution in Haifa Bay.

http://avirnaki.yefenof.co.il/

SWEDEN

Stockholm combines last stage of delivery with waste collection

In March 2017, the city of Stockholm launched "Älskadestad" (a well-loved city), a solution for optimising its logistics network, in partnership with three companies: Ragn-Sells (recycling), Bring (delivery) and Vasakronan (real estate). The idea is simple: while delivery vans usually arrive loaded and leave empty, and waste collection vehicles do the opposite, the scheme aims to combine these two flows. Parcels are left in a micro hub in the city centre, with the recycling company collecting them and providing the last kilometre of transportation. Route optimisation reduces traffic and improves air quality. First implemented in the city centre, in summer 2018 Älskadestad was extended to the old town and the project is being rolled out in Malmö this year.

http://www.alskadestad.se/

ADAPTATION

In response to one-off disasters or long-term ecosystem changes, local areas and communities are seeking to develop adaptation strategies to build their own capacities and the capacities of local stakeholders, in order to reduce negative impacts and/or take advantage of new climate conditions, or at least of the mobilisations thus generated. The development of these public policies is in full swing. Accordingly, in 2017, more than 200 different actions were listed by the members of RegionsAdapt to respond to 19 different risk categories. The priorities reflect the main vulnerabilities of the local areas based on their specific needs.

In highly urbanised countries with large cities that can finance their own initiatives, efforts are concentrated on flood protection, water management, urban planning and building consolidation: technical solutions are well-known and tried and tested and therefore easier to identify and finance. For example, coastal or river cities like Shenzen, Bratislava or the member communities of the Porous City Network in Bangkok, are multiplying green spaces to restore rainfall and flood drainage capacity, which has been impaired by the sealing of artificial surfaces in cities. In Hawaii, the federal state this year passed into law the requirement to take account of scientific knowledge on rising sea levels in any new real estate project.

Conversely, developing countries rely heavily on the rural economy and devolution tends to be weak, so institutionalisation often depends on the self-organisation of local communities. NGOs, IGOs and international donors support these local communities with technical or financial support. Adaptation strategies are based on the identification of vulnerabilities, but with real difficulties in accessing scientific data. In rural or desertified areas, the reduction of climate unpredictability cuts across small-scale development imperatives (Adenle A. et al., 2017). Thus, one of the latest projects funded by the Adaptation Fund is a project supporting small farmers in four governorates in southern Iraq, or climate-smart agriculture in Guinea-Bissau. Another major priority is empowering women in rural areas. In four provinces in Cambodia, for example, women's councils on climate change have been created, providing support and advice to municipal authorities on climate change (UNDEF 2018).

To help prevent, anticipate and coordinate emergency responses to disasters, many projects are setting up systems for disseminating knowledge and information by taking advantage of the increasing penetration rates of new technologies. To this extent, Legazpi in the Philippines uses the Balangay web alert system to warn citizens of future risks and suggest emergency measures. In partnership with the Government of Nunavut, a local university, and Inuit communities, SmartICE has developed a real-time tracking and dissemination tool for polar ice floe developments, building on local knowledge and practices (UNFCCC 2018).

UNITED STATES
Hawaii forces the real estate sector to consider rising water levels

SLOVAKIA
Bratislava for sustainable management of rainwater in urban areas

VIETNAM
In the Mekong Delta, amphibious homes against floods

CHINA
Shenzen, a "sponge city"

PERU
Canchayllo and Miraflores restore ancestral water management systems

SENEGAL
65 adaptation projects in the Kaffrine region

IRAQ
Reviving peasant agriculture to address water stress and soil salinisation

PHILIPPINES
Legazpi, a web-based information platform to respond to disasters

ADAPTATION

CHINA

Shenzen, a "sponge city"

Accelerated urbanisation in China has led to an increased risk of flooding. To adapt to this situation, 30 Chinese cities have embarked on the "Sponge City Initiative", a scheme to implement a range of techniques for the absorption of torrential rains, such as greening roofs or rainwater recovery in tanks. In partnership with The Nature Conservancy, Shenzen has been designated the pilot city of this project. The project involves creating a sustainable water circulation system to minimise the impact of climate change on the city. To date about 10% of the roofs of the city have been greened. With 50% of buildings covered, 70% of the water could be absorbed and the city air purified. The Fenghang District was ranked first among the 14 pilot areas nationwide this year.
www.nature.org

SLOVAKIA

Bratislava for sustainable management of rainwater in urban areas

"The city of Bratislava is preparing for climate change", this project, which ran from 2014 to 2017, sought to increase the resilience of the city to heatwaves and extreme rainfall by creating green spaces and using permeable surfaces. In 2017, the eight pilot projects were being finalised: 1 ha of paving replaced by green spaces in Petržalka district square, 1,000 m² of vegetation on the roof of a council-run retirement home, runoff water biological management systems, two revitalised water reservoirs. The project also provides an envelope of EUR 50,000 to support sustainable drainage projects. In April 2017, the city also adopted its Adaptation Action Plan.
www.climate-adapt.eea.europa.eu

VIETNAM

In the Mekong Delta, amphibious homes against floods

To combat the devastating floods in the Mekong Delta region, the Buoyant Foundation Project is renovating traditional Mekong homes to adapt them to floods. This model, which has already been tested in Louisiana (USA) following the 2005 floods, involves transforming the foundations by integrating floating elements to enable the structure to rise with the rising waters. The renovations are carried out in partnership with masons who are trained in these new techniques. Since 2017, an 18-month project has been underway to reproduce this project at Lang Sen, with financial support from the Global Resilience Partnership.
http://buoyantfoundation.org

SENEGAL

65 adaptation projects in the Kaffrine region

In three years, the Decentralisation of Climate Funds project has financed more than 65 adaptation projects in the Kaffrine region of Senegal. Implemented by IED Africa, this project, whose experimental phase ended in 2017, revolves around a decentralised planning and financing mechanism to strengthen the resilience of vulnerable populations, who have been able to take ownership of local projects. 36 local authorities and 300,000 people have benefited from the 900 million FCFA granted for adaptation projects in agriculture, education, livestock, and so on. This scheme leads to better coordination between national and local planning systems and supports the empowerment of communities who choose their own solutions.
www.iedafrique.org

PERU

Canchayllo and Miraflores restore ancestral water management systems

For several years climate change weakens the ecosystem of the mountainous area of Puna, and the drought threatens the Andean pastoralism. In order to preserve their way of life, two indigenous communities of the villages of Canchayallo and Miraflores have restored 3000-years-old ancestral systems of water management. By rehabilitating this irrigation system and by capturing the waters in canals and tanks through a mix of modern and ancient infrastructure, the flow of waters is limited and the meadows rekindled. Completed in 2016 with the support of the Mountain Institute, this project received in 2018 the St Andrews Prize for theEnvironment.

www.mountain.org

UNITED STATES

Hawaii forces the real estate sector to consider rising water levels

On 4 June, 2018, Hawaii Governor David Ige enacted three new climate change laws. One of them now explicitly requires developers of new real estate projects to take account, in their future environmental impact studies, of the "best available scientific knowledge at the time" on rising sea levels. The Environmental Quality Control Board of the State of Hawaii is tasked with publishing the technical terms for making these estimates in the coming months. Long affected by the erosion of its coasts, this law puts the island at the forefront of the integration of scientific knowledge in urban planning policies.

https://nextcity.org/daily/entry/ hawaii-gets-explicit-about-sea-level-rise

https://capitol.hawaii.org

IRAQ

Reviving peasant agriculture to address water stress and soil salinisation

In the governorates of Al-Muthanna, Al-Qadisiyya, Maysan and Dhi Qar, where poverty rates are among the highest in Iraq, in March 2018 the Adaptation Fund approved a $10 million, 6-year investment for a Peasant Agriculture Revival Project supported by the IFAD. In partnership with the national government, the project contributes to the development of skills and local capacity building in agricultural planning in order to improve the management of water resources and irrigation, which are directly impacted by climate change and soil salinisation. Around 15,795 farming and livestock-dependent households, some displaced or having abandoned their activity, could benefit directly from these investments.

https://www.adaptation-fund.org

PHILIPPINES

Legazpi, a web-based information platform to respond to disasters

Balangay, a real-time disaster information and collaboration platform, is helping to reduce the vulnerability of people in this area who are increasingly exposed to climate risks. Developed by the Layertech web agency and implemented in the city of Legazpi, this web and mobile application facilitates collaboration between municipal departments, research, the private sector, civil society organisations and the affected populations. Earthquakes, floods, typhoons: citizens are immediately warned. They can also learn about measures to be taken (risk maps, emergency kits, hotline). 40% of young people use the tool and they play the role of informants in their families. In 2017, the platform won the ICCG Best Practice Award.

www.layertechlab.com

AWARENESS

Through their daily living practices or their current consumption choices, citizens have a greater or lesser impact on their environment and GHG emissions. In a study published in September 2018, ADEME measured for example the carbon weight of various categories of household goods. Its results confirm that citizens are able to have a positive or negative impact on GHG emissions throughout product lifecycles: from their choices in respect of purchases, use and end of life of the goods they consume, such as buying smaller televisions or opting for second-hand textiles. By creating a link between individual acts and issues of management of collective actions, the awareness-raising that takes place closer to the context of everyday life, in particular by local authorities, invites citizens to rethink and influence their behaviours towards more sustainable practices. Several local authorities are of note for their ambitious strategies to raise awareness of these issues.

As a frequent awareness-raising tool, education and training programmes for citizens of all ages help to provide an understanding of the impact of everyday choices on resources, thus encouraging the adoption of new habits and practices. These campaigns address the areas for which municipalities are responsible, in particular waste recycling efforts – which, at the same time, can be a way of meeting health targets. For example, in 2018, Istanbul undertook a mass energy efficiency campaign with school-children, students and council employees, while Dakar brought together 2,000 people on a walk against plastic waste. This type of participatory event anchors the learning and adoption of new behaviours in concrete actions.

Innovative approaches are being developed. The use of gamification and competition mechanisms transforms awareness campaigns into fertile grounds for experimenting in citizen participation and education. For example, in Arad, Romania, where a homeowners' associations competition encourages and rewards the re-greening of buildings, while in 2019, Exeter will unveil the responses of its inhabitants to climate issues via the Minecraft modelling game. Digital tools offer a multitude of new awareness-raising materials. Local authorities are focusing on investing in them - for example Lyon, Grenoble, Saint-Étienne and Clermont-Ferrand, which are all promoting the Wasteblasterz smartphone game to educate children about saving energy and waste. Similar processes are also used to train local authorities and elected officials in decision-making and in the development of climate governance tools. "Toolboxes" are proliferating, especially in areas exposed to climate change.

While many cities are converting to the smart city model, some are choosing to use the masses of data collected for awareness-raising purposes - for example, Amsterdam, where this information is being made public for citizens to learn about their collective progress. In another approach, Liverpool's ambition is to become the first "climate-positive" city in the world, by using a blockchain platform to offset the carbon footprint of any daily item or daily service by investing in a forest conservation project, thus guiding citizen choices.

UNITED KINGDOM
Liverpool, discouraging and offsetting polluting activities with blockchainn

UNITED KINGDOM
Exeter, inclusive innovation through video games

NETHERLANDS
Amsterdam, urban data as an awareness-raising tool

ROMANIA
In Arad, an annual competition of owners' associations

FRANCE
Battery collection in five Breton ports

SENEGAL
Dakar mobilises its citizens against plastic waste

TURKEY
Istanbul, awareness-raising campaign reaches 33,000 school children

INDIA
Bangalore now has a "Bicycle Mayor"

AWARENESS

FRANCE

Battery collection in five Breton ports (Saint-Quay-Port d'Armor, Légué, Port-la-Forêt, Lorient and Crouesty)

The recreational boating sector, a big consumer of batteries, is still poorly equipped to collect this specific type of waste. Since 10 May 2018, the Screlec-Batribox eco-organisation and the Brittany Region have set up the "Piles à quai!" ("Batteries Ahoy!") operation – an experiment in the collection of batteries in five marinas in Brittany. More than 40 collection points have been set up to raise awareness about sorting and to publicise this recycling channel. If this initiative is successful, it could be rolled out to the 73 ports of Brittany. In 2016, 668 tonnes of batteries were collected in Brittany, the equivalent of 202 g/inhabitant.

www.batribox.fr

ROMANIA

In Arad, an annual competition of owners' associations

"Aradul Curat" ("Clean Arad") is a competition organised by the city council of Arad to promote initiatives to improve the urban environment. Open to homeowners' associations, the jury evaluates the overall appearance of buildings and green spaces (maintenance of the land, hedges, trees). In order to encourage greening, the winners are awarded gardening tools and planting equipment. Recognised as good practice 2018 in the European Green Capital selections, this competition provides the city with an opportunity to enhance community initiatives while identifying areas requiring urban renewal.

http://ec.europa.eu

NETHERLANDS

Amsterdam, urban data as an awareness-raising tool

With "Energy Atlas", its new platform launched in 2018, the Amsterdam city council is raising awareness about energy consumption and the savings that can be achieved.

The service is based on the urban data that Amsterdam has chosen to make freely available: citizens can freely query their own energy consumption and the consumption of the companies in their surroundings. Companies can also query their consumption and that of others, while learning about the possibilities for providing renewable energy by viewing the nearest production sites.

https://amsterdamsmartcity.com

SENEGAL

Dakar mobilises its citizens against plastic waste

As part of the implementation of its local Climate Energy Plan (PCET), the Dakar city council is developing a campaign to raise citizen awareness about the environment. On 1 July 2018, a green walk was organised - bringing together more than 2,000 participants - to raise awareness about eco-actions and eco-citizen initiatives. The theme was combating plastic waste and the walkers collected all the waste that they found on their 7.6 km route. Recovered plastic bottles were returned to recycling circuits and other categories of waste were used to manufacture public benches. Several other events of this type will be organised during the three years of the PCET.

www.villededakar.org/

UNITED KINGDOM

Exeter, inclusive innovation through video games

Since May 2018, Minecraft, the famous video game, has been used by the city of Exeter to call on citizens, especially young people, to devise solutions for sustainable urban planning. The game was developed by Exeter Energy City Futures, a community interest company set up to address the city's urban development challenges. The game presents five "challenges" to which players are invited to respond: a car-free city centre, alternative energy sources, "super" bike paths and sustainable buildings. The best answers will be unveiled in early 2019, followed by the development of a final map of the innovative solutions.

http://www.exetercityfutures.com/minecraft/

UNITED KINGDOM

Liverpool, discouraging and offsetting polluting activities with blockchain

This is a world first - since July 2018, Liverpool city council has been in partnership with the Poseidon Foundation, to use its blockchain-based platform. The system enables consumers and businesses to trade carbon credits and offset their emissions. This system relies on transparency and traceability to provide a deterrent to highly polluting activities. At the same time, the Poseidon Foundation is planning education and awareness-raising initiatives in schools and universities. The City plans to use the system to offset its carbon footprint by 110%, i.e. to offset more emissions than it actually produces.

https://poseidon.eco/

TURKEY

Istanbul, awareness-raising campaign reaches 33,000 school children

In 2018 Istanbul city council organised a major energy efficiency awareness-raising campaign for school children and council employees. Several conferences and workshops were organised to motivate the public to adopt energy-saving habits and reduce their waste and water consumption. The first two-month campaign reached 4,386 students in 37 establishments and 1,000 council employees. Over the whole year, the campaign reached 33,000 children. The campaign is part of Istanbul's broader desire to develop renewable energies and reduce its consumption, in order to meet its commitment to a 20% reduction in its CO_2 emissions under the Covenant of Mayors.

www.sustainablecities.eu

INDIA

Bangalore now has a "Bicycle Mayor"

In May 2018, Sathya Shankaran was named the Bicycle Mayor for the City of Bangalore, from among 19 candidates. His role will be to bring together the cycling community, to raise awareness among the young and promote the establishment of facilities with the government. The appointment is the initiative of the Danish NGO Bycs, which has also participated in the establishment of bike-dedicated days "Cycle Days" in partnership with the city council. Bangalore is the third city in India to have a Bicycle Mayor. The city wants to get rid of its recurring traffic congestion problems by enhancing the use of bicycles: it is targeting 50% of urban trips by bicycle by 2030.

https://bangalorecycleday.wordpress.com/

DECENTRALISED COOPERATION

AROUND THE
WORLD IN 80
INITIATIVES

Through sharing experiences and good practices, encouraged by different stakeholder experiences, decentralised cooperation helps to strengthen local capacities for action. A recent report of the United Nations Office for South-South Cooperation (UNOSSC) shows that cooperation projects in developing countries are willingly embracing the Sustainable Development Goals but there is limited work on SDG 13 on climate action. Although mitigation and adaptation to climate change are not always at the top of the partnership agendas, they are nevertheless integrated, even in an underlying way, into project commitments. French communities have a special role in this scenario, as their cooperation is integrated in the political culture of local elected representatives, and supported at the national level by the state and by the EU at the regional level.

The first challenge is to strengthen the capacity for action of local officials. This is the aim of the partnership between the Burkinabe region of Plateau Central and Nouvelle Aquitaine, or the deployment of climate observatories between Hauts-de-France and Minas Gerais in Brazil. Such links are used to disseminate within administrations and communities, the knowledge gained from the experience of their peers in different sectors impacting GHG emissions, to facilitate access to funding for project holders and to acquire the tools for implementing, monitoring and evaluating climate plans. Other cooperations strengthen local energy production capacity and autonomy, while enhancing the resources available: for example, projects producing natural gas from organic waste, such as in Saint Louis, Senegal or the long partnership between the municipality of Edegem (Belgium) to improve recycling and composting in San Jeronimo (Peru).

Territorial cooperation is already highly developed in integrated spaces such as the EU, whose Interreg programmes provide, for example, a framework favourable to sharing and reproducing practices. Since 2017, for example, the French and Italian communities of the Upper Tyrrhenian region have been engaged in joint working on the ADAPT project to strengthen their climate resilience. A European multi-stakeholder coalition for development, led by the Council of European Municipalities and Regions (CEMR) and supported by the EU, the Platforma initiative facilitates cooperation between local and regional authorities in Europe and beyond. Its

project CONNECT, trialled in 2017, opens a new approach to decentralised cooperation, by organising knowledge sharing between peers at the same level. In this context, last October Barcelona, Manaquiri (Brazil) and Sri Lankan municipalities formed a partnership to share information on urban planning tools. Turin, Riga, Bilbao and Tours have also formed a long-term partnership to promote local environmentally-friendly food production systems with African partners.

Outside the usual channels of cooperation, new currents are appearing. South-South exchanges or triangular partnerships, make it possible to reinforce the horizontality of exchanges between stakeholders experiencing similar problems, and facilitates the transferability of practices. Agriculture, which is the foundation of the economies of many countries of the South, is particularly central in South-South cooperation initiatives. For example, the project carried out in 2017 by communities in Cuba, Fiji and the Solomon Islands on sustainable agriculture, responds to both the food security and sustainability requirements of a clean agricultural economy.

NOUVELLE-AQUITAINE (FRANCE) & THE PLATEAU CENTRAL REGION (BURKINA FASO)
So'Faso Projet

JUVISY-SUR-ORGE (FRANCE) & TILABERI (NIGER)
Degraded Land Reclamation Project

LILLE (FRANCE) & SAINT-LOUIS (SENEGAL)
Development of the biogas sector

NANTES (FRANCE) & DSCHANG (CAMEROON)
Cooperation for composting

CUBA, SOLOMON ISLAND & FIDJI
Promoting organic agriculture across the Pacific

GUÈDE CHANTIER (SENEGAL) & DAMANHUR (ITALY)
Twinning of two eco-villages

FRANCE, MALI, MAURITANIA & SENEGAL
Getting citizens involved with RECOPACTE

EDEGEM (BELGIUM) & SAN JERONIMO (PERU)
Cooperation for waste management

DECENTRALISED COOPERATION

LILLE (FRANCE) & SAINT-LOUIS (SENEGAL)
Development of the biogas sector

With the support of DAECT under the 2016 Climat II call for projects, cooperation with the city of Lille has enabled the development of the biogas sector in Saint-Louis, Senegal, with 21 biodigestors in operation at the end of 2017. The project aims to combat fuel poverty, while providing a small-scale, urban wastewater and organic waste treatment solution. The partnership has included support for the training of masons and businesses, the organisation of training and awareness sessions for households and the creation of two local monitoring committees. The installation of 25 new units in Saint-Louis is planned for the end of 2018 and 80 units at the regional level by 2020.

https://international.univ-lille.fr/

NANTES (FRANCE) & DSCHANG (CAMEROON)
Cooperation for composting

Through this biowaste to compost recovery project, supported by Nantes Métropole, the EU and the Compostri association, Dschang Council now manages a household waste composting unit that enables it to process 1,000 tonnes of waste per year. Nantes Métropole has been involved financially and in staff training through exchanges with Kindia in Guinea. The objective for 2018 is to achieve 10,000 tonnes/year and for it to be self-funding through the sale of the compost and the use of carbon credits. This project is part of the Nantes Métropole DANK decentralised cooperation programme, a partnership between Dschang, the Association of Mayors of Grand 'Anse (Haiti), and the Kindia Council (Guinea) for waste management, access to water and sanitation.

http://www.compostri.fr/cooperation/

NOUVELLE-AQUITAINE (FRANCE) & RTHE PLATEAU CENTRAL REGION (BURKINA FASO)
So'Faso project

Cooperation between Nouvelle-Aquitaine and the region of Plateau central in Burkina Faso is promoting the sustainable development of these two regions through exchanges between stakeholders. In particular, it has led to the creation of a Climate Energy Plan for Plateau Central, to construct 23 drinking water supply systems, including one with a solar powered pump, and to raise the awareness of 16,420 users on complying with hygiene rules and the protection of water resources. In terms of agricultural development, six educational farms have been created, with 7,400 farmers trained in agro-ecology and 12,600 trees planted. The So'Faso three-year programme (2016-2018) won the Platforma Awards for decentralised cooperation in 2018. The two Regions have committed, for 2019, to implementing a programme for access to renewable energies in the rural areas of Plateau Central.

www.nouvelle-aquitaine.fr

JUVISY-SUR-ORGE (FRANCE) & TILABERI (NIGER)
Degraded Land Reclamation Project

As part of its twinning with Juvisy-sur-Orge, 67 ha of degraded land have been restored in this area plagued by Tilaberi droughts. The production of 372 water retention terraces and the cultivation of 6,324 plants and seeds (grass, trees) has helped to start land regeneration and to control runoff. Completed in 2017, this adaptation project enables the inclusion of villagers in the fight against the rural exodus: awareness and training sessions, better land fertility and cash-to-work compensation for workers. The project has received the support of the MAE (call for climate project II) and the Departmental Council of Essonne and is part of the community development plan of the Tilaberi community.

http://juvisy.fr/votre-ville/jumelages/

FRANCE, MALI, MAURITANIA & SENEGAL
Getting citizens involved with RECOPACTE

In partnership within the "Network of Communities for the Citizen Participation of the Territories", Grand Paris Sud and Evry (France), Dakar (Senegal), Commune V of Bamako and Kayes (Mali), Nouakchott and the Mauritanian Association of Municipalities of the South (Mauritania) are collectively committed to involving citizens in the definition and implementation of joint sustainable development projects, by sharing good practices and transferring experiences, in partnership with Arène, Ile-de-France. Since 2017, the City of Dakar - in partnership with Grand Paris Sud - and the Urban Community of Nouakchott, CoMSSA prizewinners, have made the choice to pool respective Climate Plan strategies with one another and with all RECOPACTE member territories.

https://www.grandparissud.fr/

EDEGEM (BELGIUM) & SAN JERONIMO (PERU)
Cooperation for waste management

The collaboration between Edegem (Belgium) and San Jeronimo (Peru), selected as a good practice at the 2018 Platforma Awards, has focused on composting food waste since 2005. A collection system has been set up, with the recovery of organic waste from the Vinocanchón market and residents who are trained in selective sorting. A plot of land is lent by farmers who can use compost. In 2016, a recycling centre was created (1.5 tonnes of waste per day). The project also has a social dimension, thanks to the improvement of the working conditions of the recyclers.

http://platforma-dev.eu

GUÈDE CHANTIER (SENEGAL) & DAMANHUR (ITALY)
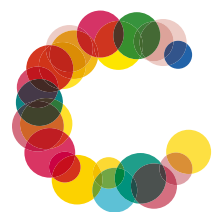### *Twining of two eco-villages*

At the end of March 2018, 1,400 fruit trees were planted in this eco-village of 7,000 inhabitants in Guède Chantier (Senegal), thanks to cooperation with Damhanur, another eco-village in northern Italy. Since 2014, this twinning has sought to share experiences between these two communities, which are in different situations but also which also have a lot to share (sustainable irrigation systems, organic farming, compost, hives, etc.). Training in the conservation and processing of agricultural products was also organised in March 2018. This cooperation has led to an increase in the food autonomy of this community, which has abundant production in the cool season, but encounters difficulties during the rest of the year, while fighting against deforestation and land degradation.

www.damanhureducation.it

CUBA, FIJI & SOLOMON ISLANDS
Promoting organic agriculture across the Pacific

In Cuba, 14 sustainable agriculture projects involving 1,216 families have been launched with support from the Global Environment Fund. In May 2015, a visit by farmers from the Solomon Islands, El Salvador, Fiji and Guatemala, as well as workshops, led to the sharing of experiences by showing how low-cost and environmentally friendly practices can be implemented in the Pacific (vermiculture, irrigation methods, solar energy pumps, etc.). Based on the methods learned, 17 demonstration farms were set up in Fiji in 2017 and good practices will also be disseminated through POET.

wwww.thegef.org