

A SYSTEMIC APPROACH TO SUSTAINABLE AND RESILIENT CITIES

Sufficiency
Inclusion
Resilience
Creativity

Cities are complex systems under continuous transformation. In light of climate change, the overexploitation of resources and the resurgence of major global pandemics, the consequences of the Anthropocene represent a serious threat to the social, economic and environmental balance of these interconnected territories.

/// WHY DEVELOP A SYSTEMIC APPROACH TO SUSTAINABLE CITIES?

Following the Meadows (1972) and Bruntland (1987) reports, the 6th report of the Intergovernmental Panel on Climate Change (IPCC) emphasises that a mix of adaptation and mitigation solutions "implemented in a participatory and integrated manner can promote rapid systemic transitions in both urban and rural areas" (2021).

The need for a paradigm shift is gradually taking place. Siloed approaches to urban planning must make way for more holistic approaches which taken into consideration the interconnection of issues and territories. Similarly, the Covid-19 health crisis has only served to amplify the urgency of developing, effective adaptation and resilience strategies for territories, alongside climate change mitigation.

Adopting the paradigm of resilience as a logical framework and driving force for the necessary transformations of our economies, our territories and our ways of life, allows us to no longer consider these transformations as renunciations, backward steps, or losses of quality of life. On the contrary, they represent unique opportunities to improve the human condition and its prosperity in the centuries to come.

The scale of the changes required is considerable in order to implement concrete and operational transition actions. It is, therefore, essential to both actively involve and mobilise all stakeholders, public, private, citizens and scientists (elected officials and their services, inhabitants and their associations, companies and economic actors, experts etc.).

Redefining visions of tomorrow's sustainable cities and territories involves key components. Firstly, it is necessary to develop a systemic approach adapted to the local context. Secondly, it is essential to integrate all stakeholders in the value chain of the sustainable city, from planning to maintenance, design, construction, installation and operation.

This global transition objective has led Sustainable City by France (SCbF) to play an active role in identifying, capitalising on and widely disseminating tools, methods and good practices in order to accelerate the ecological transition process across all territories.



ZOOM AT SUSTAINABLE CITY BY FRANCE

> **SCbF is an association which acts as a "do tank", bringing together all the professional stakeholders of the city and the sustainable territories, both public and private: local authorities, private companies, the State and experts.**

> **Chaired by Mr. Patrice VERGRIETE, President of the Urban Community and Mayor of Dunkirk, SCbF is a place for capitalisation, dissemination and support for the implementation of French expertise and know-how in the field of sustainable cities at national and international level.**

> SCbF articulates its actions around **working groups** on transversal and operational subjects (digital tools and sustainable city, zero net artificialisation, etc.), **training and tailor-made workshops**. All of these actions are dedicated to local authorities, **cooperation and international delegations**.

> **Its vision** of the sustainable city and territory is based on a **logical framework for action** based on four pillars: Sufficiency, Resilience, Inclusion and Creativity, developed in more detail in its manifesto.

/// A SYSTEMIC APPROACH TOWARDS SUFFICIENCY, RESILIENCE, INCLUSION AND CREATIVITY

These four all-encompassing pillars are the fundamentals of the sustainable city of tomorrow, and represent the operational framework of SCbF and its manifesto. This approach allows for an accelerated paradigm shift, by addressing the transition issues in a systemic way.

The systemic approach tackling territorial **sufficiency** heavily relies upon the urban territorial network which leads to multiple consequences; a decrease in energy consumption, waste production by the source, urban sprawl and commuting needs. It is aware of the physical limits of the planet and invites us to change our consumption and usage patterns.

This **resilience-based** approach aims to take into consideration all potential vulnerabilities (environmental, climatic, health, economic, social, organisational, infrastructural, etc.) in the overall strategy of the territory. The resilient city must also continue to function independently of major shocks.

The sustainable city is **inclusive** because it is endowed with integrated tools that improve the well-being of its population, especially the most vulnerable. By associating institutional, economic, citizen and academic actors, these levers of collective intelligence promote social links, citizen participation, training in the major challenges of transition, etc.

Finally, the systemic approach of the sustainable city is a lever of **creativity**, as a vector of human, cultural, social and economic progress on a local scale. It allows the city to be regulated in the general interest; quality of life, sustainable and non-dislocatable jobs, short circuits, societal and ecological responsibility of companies, digital sufficiency, etc. It relies on scientific expertise but also on the intelligence of citizens, social and organisational innovation.

[Read the SCbF manifesto here](#)

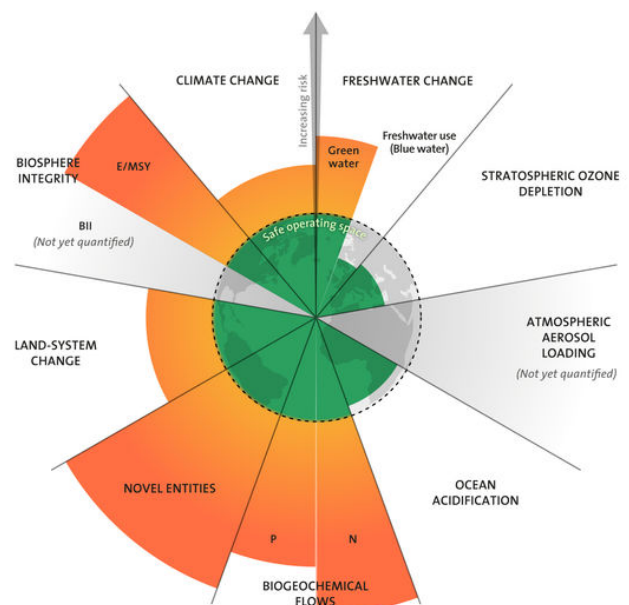
/// THE 9 PLANETARY BOUNDARIES

This concept, developed in 2009, lays out a global vision of planetary boundaries that considers the interactions between different spheres. This approach poses the following question: "What boundaries have already been exceeded? Up to what limits will the Earth be able to absorb anthropogenic pressures without compromising the living conditions of human beings?"

> Of the seven quantifiable boundaries, the scientific community notes that **six have already been crossed**: climate change, biodiversity erosion, disruption of the bio-geochemical flows of nitrogen and phosphorus, land-system change, the freshwater cycle and chemical pollution.

> **Because of the interdependence of planetary borders**, every border crossing has consequences for the others. It also has implications for the earth system's sustainability for homo sapiens. Scientists are calling for urgent action to address this global ecological threat.

> This approach is now recognised and adopted at **European and international levels**, including by the United Nations.



Diagnosis of the planetary limits at the scale of the southern Loire

> Epure, the town planning agency for the Saint-Etienne region, and the "Ecole des Mines" of St Etienne have worked together to territorialise the planetary limits at the local level of the Southern Loire. This pioneering initiative has demonstrated that across the Southern Loire, climate change and the increase in airborne particles have reached a dangerous level. While the erosion of biodiversity and the disruption of freshwater and nitrogen flows are uncertain.

/// THE "DONUT" THEORY

A systemic theory developed in 2017 by economist Kate Raworth.

> A **social floor**, which refers to the need to guarantee access for all to basic needs (food, housing, security, health, education, etc.).

> An **environmental ceiling** to be respected that takes into account all the physical limits of the planet

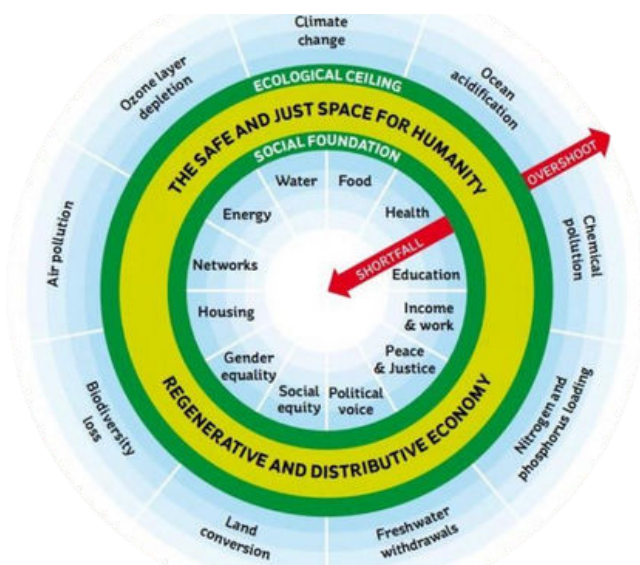
It is a question of regulating all human activities between two limits in order to guarantee the quality of life of residents. Simultaneously, the environment and the natural resources that make up our Earth are protected and preserved.

Amsterdam

Amsterdam is using the Donut Theory as the basis for its recovery plan to counteract the effects of the health crisis. Based on this theory, the city of Amsterdam has produced a "city profile" showing where basic needs are not being met and where "planetary limits" are being exceeded. It clearly shows the interrelated nature of these problems; however, this theory does not provide clear answers, merely a way of looking at things, so that we do not continue with the same structures as before.

Read more :

<https://assets.amsterdam.nl/publish/pages/867635/amsterdam-city-doughnut.pdf>



THE SUSTAINABLE CITY BY FRANCE HUB

www.sustainablecitybyfrance.org

> This platform is a gateway to all the relevant content for sustainable city professionals: training courses, methodological guides, tools, specialised sites, standards and labels, etc.

> There are also examples of achievements that address the challenges of the regions. The aim is to showcase operational solutions and encourage their deployment in France and internationally.

The sheets present a series of tools with high potential for sufficiency, resilience, inclusion and creativity for a systemic approach to urban issues. It remains to accelerate the transition by massively expanding these good practices.



AT CONCRETE EXAMPLES OF TERRITORIAL IMPLEMENTATIONS

/// CEREMA'S RESILIENCE COMPASS

Cerema's resilience compass is designed to help local authorities to better anticipate, act, bounce back and transform themselves over time, thereby reducing their vulnerability.

> The compass is a 'reference framework' for resilience, broken down into **6 principles and 18 levers**. It can be adapted to any type of territory and organisation, and suggests that any public policy, approach, project or action be reviewed from the perspective of **resilience**.

> The diagram opposite represents the evolution of the sustainability of a territory following an initial disturbance (flood, epidemic, closure of a factory, etc.). It shows the capacity of a territory to resist, to absorb the disturbance and to evolve.



The Compass of the "Porte de l'Isère" Agglomeration Community (PIAC)

> In the framework of the Territorial Climate Air and Energy Plan, the PIAC conducted a workshop with some forty elected officials: the compass helped to identify orientations and levers that underline the need to cooperate and the place of the intermunicipal scale in the PIAC's resilience strategy.



/// FLANDERS-DUNKIRK URBAN PLANNING AND DEVELOPMENT' TOILES

Developed by the Flanders-Dunkirk Urban Planning and Development Agency (AGUR), the "toiles" are systemic tools offering a detailed vision of the territory's ecosystem and the links created. There are in particular: industrial, energy, agri-food, water and health or social action.

The Toile industrielle example

> It supports strategic prospecting, forecasting, simulation and circular economy approaches, enabling local actors to define their energy transition strategy and identify action levers.

More information : <https://circularports.vlaanderen-circulair.be/en/practices/detail/toile-industrielle-dunkirk>



/// VILLE E+ AS AN INTEGRATED SUPPORT TOOL

VilleE+, an urban strategy consultancy, assists public/private clients in taking decisions to organise the value chain of a sustainable city project through a holistic and systemic approach, rather than in silos, of the city's components (citizenship, mobility, resources and real estate).

> Its missions: **"aiE+ by impact"** makes it possible to define a **reference framework and to evaluate the economic and environmental impacts and citizens' commitments**. It is also a tool to assist in the successful deployment of a participatory approach with the stakeholders of the territory (implementation of collaborative processes and workshops, animation of the governance).

> **Its benefits:** An effective collaborative methodology for co-construction through consultation and impact assessment at each stage of the project life cycle.



/// THE LCA APPROACH AS A REFERENCE FRAMEWORK FOR THE EUROPEAN SUSTAINABLE CITY

Life Cycle Assessment (LCA) is a comprehensive, multi-criteria assessment tool for quantifying the potential environmental impacts of a product or service.

> It is based on a number of **criteria for analysing pollution inputs and outputs**, to be subsequently quantified at each stage of the life cycle.

> **Its benefits:** it allows the comparison of different options by restoring the complexity of the environment, avoiding the risks of environmental impact transfer, and interpreting the results according to the initial objectives.



Elodie a reference tool in LCA for the building sector

Launched by The Scientific and Technical Centre for Building (CSTB) and developed jointly with Bouygues Construction, ELODIE is a multi-criteria tool that enables the environmental quality of a building to be assessed throughout its life cycle. In addition to materials, the impact of the building's energy and water consumption during operation and the impact of user transport are also taken into account.

> The objective is to calculate the carbon impact or a multi-criteria environmental profile of an operation to **facilitate decision-making**.



/// THE HOLISTIC APPROACH TO URBAN DEVELOPMENT IN KERAN:

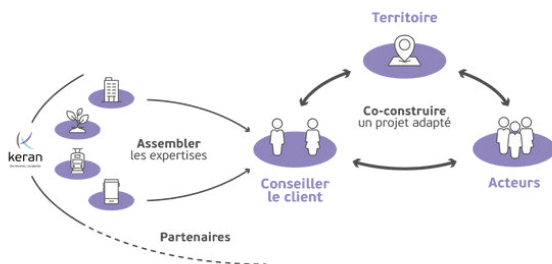
Keran's approach is to look at the project as a whole, using a transversal approach. They thus provide integrated responses (architectural, landscape, technical, economic, political, social and environmental) to their projects.

The overall approach is based on the following three main principles:

1/ Mobilising the right skills and pooling expertise to understand the project as a whole.

2/ Co-constructing the project with stakeholders by involving all the actors concerned (partners, managers and users).

3/ Putting people back at the heart of development concerns, in order to better integrate the uses of public spaces, mobility and facilities.



The Kisumu Urban Development Project:

Keran Groupe Huit has developed four Local Physical Development and Land Use Plans (LPDPs) for the city of Kisumu - through the following services: holistic diagnostic assessment of the city of Kisumu, development of the city's development strategy, environmental management plan, etc.

> **Benefits:** Advice in the implementation of new strategies of organisation, management and urban development and offers **support at all project stages**, through local solutions, which are both realistic and manageable for stakeholders.

/// A EUROPEAN LABEL TO MEET THE 17 SUSTAINABILITY GOALS (URBAN AGENDA)

The "Smart Sustainable Cities" VDI label, launched by Efficacy and Cerema, is based on an **integrated vision of sustainable development** and provides a complementary assessment of the Climate Air Energy issues on four major sustainable development themes: Innovation, Social Cohesion and Quality of Life, Economic Transition and Resilience (excluding adaptation to climate change).

It complements the European Energy Award (EEA), known as the Climate Air Energy label, and provides a European response to the emergence of major international frameworks on sustainable cities.



> Objectives: to **support local authorities** in the development and improvement of their sustainable development strategy, and to **assist in the management and evaluation** of local policies in a **cross-cutting and systemic** manner.

> Benefits: **encourage the exchange of** good practices between local authorities, **reinforce their visibility and attractiveness** on a European scale through this award. Finally, it **will facilitate access to national and international funding**.

> Internationally: The label is also intended to be part of the international landscape in order to **offer local authorities a European approach** to strategies and levers for action. Thanks to the complementarity of the two labels Climate Air Energy and Smart Sustainable Cities, Europe could thus have a **label covering all the fields of the sustainable city**.

The VDI label tested with the Urban Community of Dunkirk

A first pilot phase of the label was carried out in 2021 with 7 local authorities in France and overseas.

> The Urban Community of Dunkirk achieved 64% VDI certification (3/5 stars). This mission was carried out by a pair of experts, an urban planner and an engineer. It helps them to support the local authorities throughout the process and to understand the multiple urban, economic and social issues involved in the certification of a territory.

> The European deployment of the label (Urbact 2022 project in conjunction with the European Energy Award association) and its international deployment (Morocco, India, etc.) have agreed to launch pilot phases with international local authorities from 2022.



Niveau atteint Economie Circulaire à confirmer

This fact sheet presents a selection of exemplary projects highlighted on the Sustainable City by France portal to showcase French ambition and expertise in the field of sustainable cities, particularly among international professionals.

The "Sustainable City by France" sheets are an updated version of the sheets previously published in 2015 by the Vivapolis network with a view to welcoming foreign delegations to France and promoting French achievements at international scale.

The Sustainable City by France (SCbF) NGO is the result of the convergence between the Institut pour la Ville Durable (IVD) and the Vivapolis network and is the place to capitalise on disseminate and support the implementation of French expertise and know-how in the field of sustainable cities, both in France and internationally.

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