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The French Climate Challenge

NOVEMBER 2025

◂ France's Strategic Response to the Carbon Challenge in Buildings ▸

CONSTRUCTION21 IMPULSER LA VILLE DE DEMAIN
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Alliance HQE GBC FRANCE
OID ŒUVRER POUR L'IMMOBILIER DURABLE

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Foreword

“Change is not only possible – it is inevitable.”

In March 2024, France, alongside the United Nations Environment Programme (UNEP), hosted the first-ever World Forum on Buildings and Climate in Paris. This major event, which brought together more than 70 countries, aimed to place the building sector at the very heart of international climate action.

Buildings account for nearly 30% of national CO_2 emissions, with over a third tied to construction and materials. As cities expand and the climate crisis deepens, decarbonising the built environment is no longer optional — it’s a global imperative. Yet, while the challenge is shared, not all countries are equally equipped to respond. But no country can afford to ignore the problem.

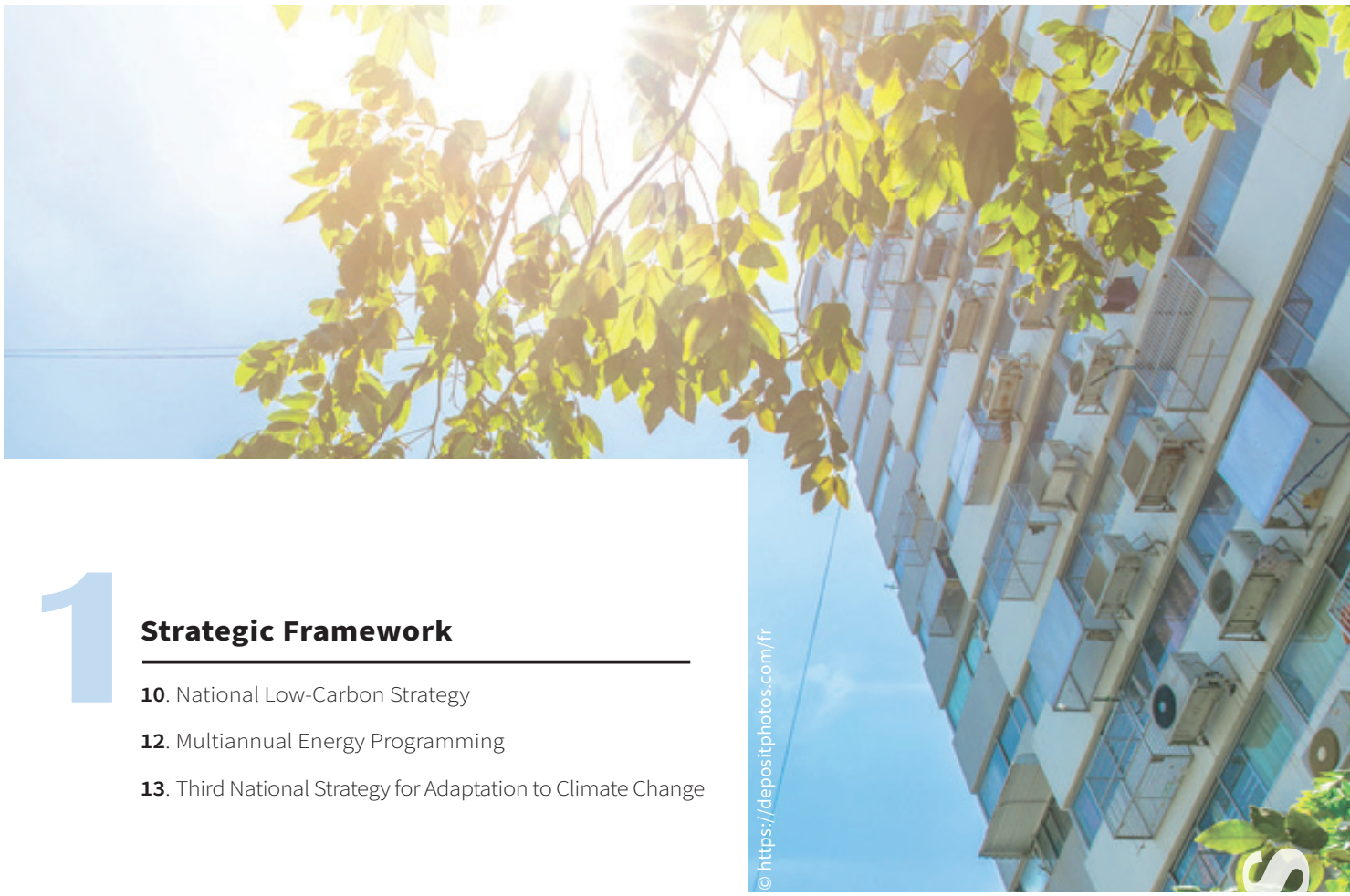
France has chosen to lead the fight. With ambition, coherence and determination. Since the Paris Agreement, France has been accelerating in developing an integrated national strategy to transform its building sector — from regulations and technical standards to territorial innovation and international cooperation. It’s not just a policy framework, it’s a national strategy mobilising regulations, innovation, data, public and private stakeholders and people.

At the heart of this strategy lies a clear carbon trajectory: France is one of the few countries to embed building decarbonisation into law, with milestones and accountability mechanisms included. Environmental Regulation (RE2020), the Energy Performance Certificate (EPC, or DPE in French), the “Tertiary Decree” and other instruments form a coherent regulatory backbone supporting both new construction and the renovation wave.But France’s approach goes far beyond compliance. It relies on four complementary pillars: sufficiency, energy efficiency, renewable energy, and, where relevant, low-carbon baseloads. The transition also integrates circular economy principles, climate adaptation, biodiversity, water management, well-being and health and equity across regions.

Thus, France has developed a comprehensive ecosystem of tools and methods to support this transformation: life-cycle assessment database, building performance monitoring platforms, digital innovation programs, and renowned labels and certifications. These instruments help steer and foster action and measure progress.
Territorial justice and climate adaptation are not afterthoughts — they are embedded in national planning through the National Low-Carbon Strategy (SNBC), the Multiannual Energy Programming (PPE) and the Third National Plan for Adaptation to Climate Change (PNACC3). Climate risks are mapped, regional needs are acknowledged, and skills development is recognised as a key condition for success.
Behind the strategy, a wide range of public and private actors, regional networks, training institutions and civil society organisations work together to accelerate change. Innovation is everywhere — in digital tools, construction products and equipments, renovation methods — supported by ambitious public investment and field experimentation.

France also believes in the power of example. Through showcase projects, information, competitions, exhibitions and international partnerships, it shares real-world solutions and encourages replication. This booklet is more than a reference guide. It’s a clear, concise and accessible document, tracing the paths, policy choices, experiments and results. This booklet becomes a tool for dialogue between partners, but also a lever for internal transformation, by fostering critical reflection on the still too numerous blockages: renovation financing, regulatory complexity, territorial inequalities. It offers a strategic overview of the French model, highlighting the key drivers of transformation: legislation, tools, standards, local mobilisation, training, innovation, and global alignment. It proves that when all parts of a system move together in the same direction, change is not only possible — it becomes inevitable. France is not claiming to have all the answers. But it is demonstrating that a country can align its ambition with its actions, and turn its commitments into concrete outcomes. The world needs such leadership. The buildings sector can — and must — be part of the solution.

This publication is the result of a joint effort by the OID, ADEME, French Institute for Building Performance, Construction21, and the Alliance HQE-France GBC, committed to supporting and sharing the French transition model.



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*Cover : Estran project by Bechu & Associés: Center of excellence in marine biomimicry in Biarritz (France). A building designed to be regenerative, biomimetic, "liquid" and ecosystemic.

Strategic Framework

National Low-Carbon Strategy

► **The SNBC is the overarching framework coordinating decarbonisation across all sectors, with a strong focus on buildings and energy efficiency.**

The National Low-Carbon Strategy (SNBC) defines France's pathway to net zero greenhouse gas emissions by 2050. It sets sectoral reduction targets, establishes carbon budgets, and aligns new regulations such as RE2020 and renovation policies to drive the transition.

Decarbonisation Objectives

≈0
emission from energy production & building operations[1]

-81%
industrial emissions (compared to 2015)[1]

-46%
agricultural emissions[1]

-66%
-66% waste-related emissions[1]

It also aims to halve overall energy consumption and reduce the carbon footprint of imported goods.

The SNBC was introduced by the 2015 Energy Transition for Green Growth Act. It serves as France's strategic roadmap to achieve carbon neutrality. Developed through extensive consultation, the strategy combines long-term objectives, intermediate milestones, and 41 recommendations covering energy, transport, buildings, industry, agriculture, and waste.

Buildings in the Strategy

The building sector (both residential and non-residential) accounts for around 25 % of France's emissions, making it a key area of focus for national decarbonisation efforts[2]. The SNBC sets a trajectory for near-zero operational emissions by 2050. This requires large-scale renovations to BBC (Bâtiment Basse Consommation) standards and decarbonisation of heating systems. RE2020, which applies to all new buildings — including residential buildings and office buildings as well as primary and secondary schools — reinforces this approach by establishing strict performance criteria for energy use and carbon emissions. The regulation is expected to be extended to all building types in the near future.

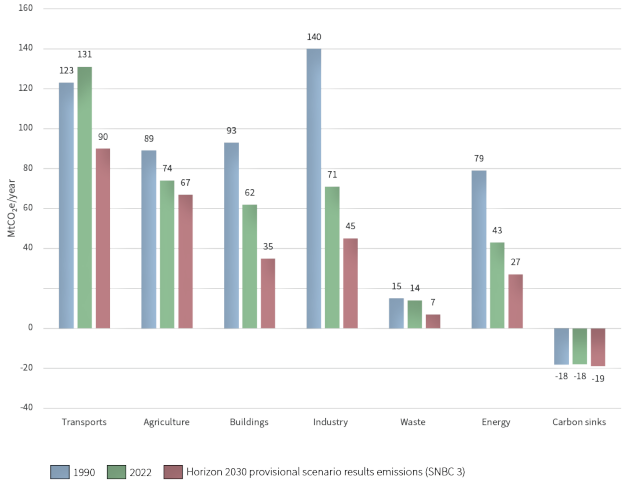
Key Figures and Implementation Tools

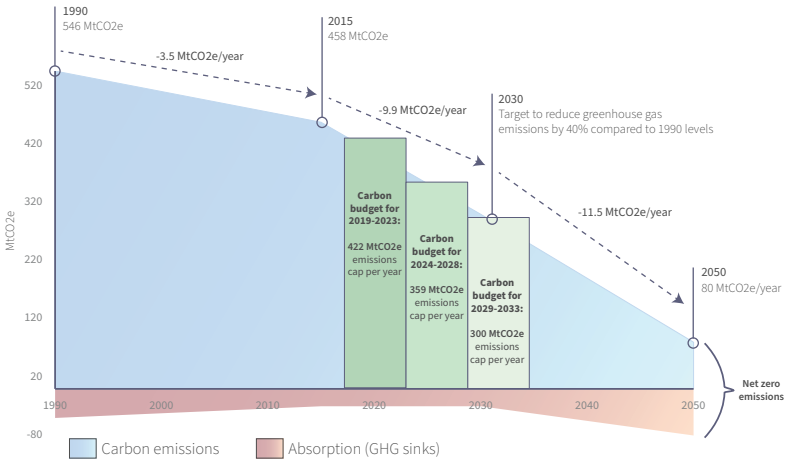
- Global emissions reduced by 13,4% between 1990 and 2023[3].
- Carbon budgets defined in 5-year periods to cap national emissions
- RE2020 in force since 2022 for several new building types
- Renovation policies prioritising deep retrofits and energy savings
- Carbon sinks (forests, soils) and emerging capture technologies will balance residual emissions

[1] Rapport du ministère de la Transition écologique et solidaire, « SNBC – La transition écologique et solidaire vers la neutralité carbone », mars 2020.
[2] Rapport du ministère de la Transition écologique et de la Cohésion des territoires, « Feuille de route de la décarbonation du cycle de vie du bâtiment », janvier 2023.
[3] Ministère de la Transition écologique et de la Cohésion des Territoires, « L'empreinte carbone de la France de 1990 à 2023 », 14 mars 2025.

GHG emissions distribution by sector:

Annual domestic GHG emissions in 1990, 2022 and Horizon 2030 provisional scenario results (SNBC 3)





Multiannual Energy Programming

► **Buildings play a major role in energy policy by shaping medium- and long-term demand. They are also becoming energy hubs, integrating photovoltaic generation, electric vehicle charging, and other technologies.**

The Multiannual Energy Programming (PPE), framed by Articles L141-1 to L141-6 of the Energy Code, establishes the State's energy priorities for the next 10 years. It is updated every 5 years. The PPE sets the guidelines to drive the necessary changes for decarbonizing the energy sector and achieving carbon neutrality by 2050 (cf. the National Low Carbon Strategy - SNBC). The third PPE (2025-2030/2030-2035) is currently being adopted, succeeding the first PPE (2016-2018) and the second PPE (2019-2023/2023-2028).

The PPE notably includes a section focused on improving energy efficiency and reducing primary energy consumption, especially fossil fuels, which is particularly relevant for buildings, and a section dedicated to the development of renewable and recovered energies, especially for heating and cooling.

Regarding buildings, the PPE aims to :

1. Accelerate the reduction in final energy consumption

- Article L100-4 of the Energy Code mandates a 50% reduction in total final energy consumption between 2012 and 2050 (the 2023 figure indicates a 16% reduction so far)
- The objective for residential buildings is the renovation of approximately 400,000 individual houses and 200,000 collective housing units each year on average until 2030. The implementation of the 2019 tertiary eco-energy decree aims to reduce final energy consumption in tertiary buildings by 40% by 2030 and by 60% by 2050 (or to reach a maximum energy consumption threshold depending on the type of tertiary building)

2. Accelerate the phase-out of fossil fuels for heating

- Removal of financial incentives for oil and gas boilers
- The plan foresees the elimination of oil boilers in tertiary buildings by 2030 and a 75% reduction of such boilers in residential buildings, affecting about 300,000 households annually transitioning away from oil heating
- A progressive replacement of gas boilers is also planned, with reductions between 20-25% in residential buildings and 15-20% in tertiary buildings by 2030 compared to 2021

3. Accelerate the development of renewable and recovered heat

- Massively develop decarbonized heating systems, notably through public support for the French heat pump sector, targeting the production and installation of one million heat pumps annually by the end of 2027. The ambitious target of 44 to 52 TWh produced by heat pumps by 2028 has already been met in 2023 with 50 TWh
- The goal is to multiply by five the amount of renewable and recovered heat and cold supplied via heat and cooling networks (comparing 2030 to 2012). Local heat and cold supply planning is mandatory for municipalities with over 45,000 inhabitants, supported by the Heat Fund which from 2009 to 2023 allocated €4,4 billion in grants for 8,500 projects producing 45 TWh/year of renewable heat

4. Support the development of decarbonized electricity in buildings and demand flexibility

- Support installation of rooftop or canopy photovoltaic (PV) systems through favorable feed-in tariffs for PV systems under 500 kWc or through tenders, alongside equipment mandates for certain building types
- Electricity system flexibility aims to balance supply and demand across various timescales and reduce network congestion, particularly through demand flexibility measures affecting water heating (able to shift 10 GW since the 1980s), heating and air conditioning, and tertiary building uses

Third National Plan for Adaptation to Climate Change

► **Adapting to the Future Climate – The + 4°C Reference Trajectory for Climate Change Adaptation.**

The TRACC will be incorporated into the Environmental Code and gradually taken into account in planning documents as they are renewed, ensuring that both public action and private strategies quickly integrate adaptation into France's future climate strategy.

In March 2025, the French government launched the third National Plan for Adaptation to Climate Change (PNACC-3). This five-year plan (non-binding) is, for the first time, based on the Reference Warming Trajectory for Climate Change Adaptation (TRACC), which anticipates a warming of +4°C by 2100 in mainland France (equivalent to +3°C worldwide).The TRACC is now expected to guide all public policies, in particular those relating to urban planning and housing, and to concretely direct adaptation actions across all regions, including overseas territories.

Buildings Resilience

The building sector is a central focus of PNACC-3, requiring a profound transformation of practices: choice of materials, architectural and technical design, water management, adaptation to hazards, as well as capacity development and mobilization of all industry stakeholders. Numerous measures targeting adaptation to heat risks or the study of vulnerability to specific climate hazards, and the corresponding mitigation activities, are aimed at specific building types: housing, penitentiary centers, healthcare facilities, schools, cultural heritage, and state-owned real estate. Some measures are cross-cutting.

Examples of Measures:

- 11 million houses are located in areas at risk for clay shrinkage and swelling (RGA). A series of actions aims to protect the population from building disorders related to RGA, notably through preventive funding
- The increase of the major natural risks prevention fund (FPRNM) to 300 million euros per year will better support local authorities in buying back threatened buildings and financing works to reduce the vulnerability of homes or premises
- The construction sector's weather indemnity scheme now explicitly covers heatwaves as a meteorological hazard
- Financial support for the development of renewable heat and cooling networks via the heat fund (fonds chaleur)
- Current building regulations will be assessed and progressively improved so as to better integrate protection against heat
- Progressively, all standards and technical references must account for the future climate according to the TRACC

With PNACC-3, the territorial implementation of the plan will be strengthene

PNACC-3 places strong emphasis on effective local adaptation through regional climate conferences (COP régionales), which will be mobilized to develop strategies tailored to territorial realities (coastal areas, mountains, forests, agriculture, etc.).
Each regional prefecture is also expected to appoint an adaptation officer to support local authorities.

2.


The 3 Pillars
of Transition
in France

Energy Sufficiency Plan

► **France is one of the first countries to embed energy sufficiency into official strategy, combining voluntary actions, regulations, and public leadership to accelerate the transition.**

The Energy Sufficiency Plan outlines France's strategy to reduce energy consumption. The plan aimed to reduce energy consumption by 10% in its first two years and now aims for a 40% reduction by 2050[1]. It establishes sectoral measures, encourages behavioural change, and positions sufficiency, among mitigation measures, as a formal pillar of national energy and climate policy.

The Energy Sufficiency Plan was launched in October 2022 in response to the energy crisis and in support of France's climate commitments. It is structured around four pillars: sufficiency, energy efficiency, renewable energy, and nuclear power. Developed through national consultation and sectoral working groups (transports, sports, digital, housing…), the plan sets out concrete measures for administrations, businesses, local authorities, and citizens. Sufficiency is now an integral component of France's energy policy framework.

Reduction Objectives

The plan establishes clear consumption reduction targets:

-10% of total energy use in the first two years compared to 2019 levels[1]

-40% by 2050[1]

Initial results have shown progress, with a 12% decrease in energy demand recorded between August 2022 and August 2023[2] (weather-adjusted). Beyond reducing demand, these measures strengthen France's energy security, lower emissions and generate significant cost savings.

Key Measures Across Sectors

The strategy relies on a mix of voluntary commitments and binding rules, adapted to each sector:

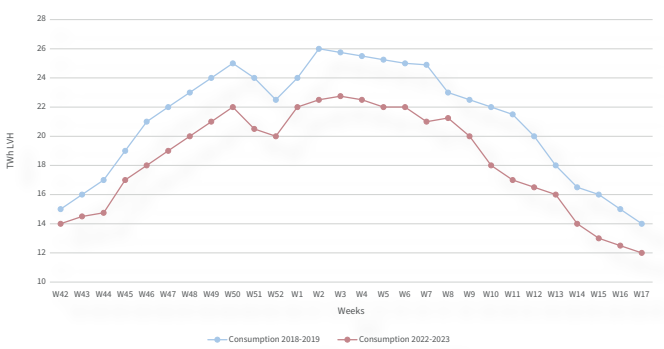
- **Public sector**: heating capped at 19°C, cooling at 26°C[1], lighting restrictions, promotion of teleworking and carpooling
- **Businesses**: reduced lighting and heating, optimisation of processes, communication campaigns
- **Local authorities**: conversion to LED public lighting, lower heating in public facilities
- **Citizens**: support for renovations (e.g. MaPrimeRénov'), awareness campaigns to change consumption habits
- **Transport**: incentives for train travel, carpooling bonuses, and speed limit reductions

Key Figures and Implementation Tools

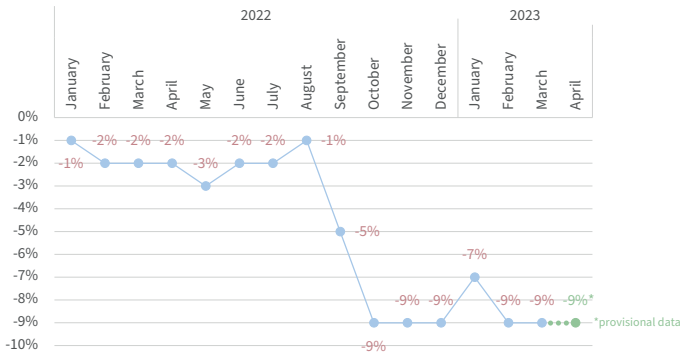
- First national plan in Europe to formally integrate sufficiency as a strategic pillar
- A -12% reduction in national energy use in the first year of implementation
- 9 thematic working groups to coordinate actions and monitor progress
- Complementary to existing decarbonisation measures such as the SNBC and RE2020
- Regular progress reviews to adjust measures and sustain momentum over time

[1]Rapport du Gouvernement, « Plan de Sobriété énergétique », 6 octobre 2022.
[2]Rapport du Gouvernement, « Plan de Sobriété énergétique », 20 juin 2023.

Electricity and gas consumption over time in France:
2018-2019 vs 2022-2023



Consumption during 2022-2023 winter (at normal temperature) compared to 2014-2019 period (average values)



Energy Efficiency in Buildings

► Energy efficiency is the foundation of the building sector's low-carbon transition: a cornerstone of climate action. It is supported by a growing regulatory framework that aims to speed up renovations and reduce energy consumption.

Representing nearly 45% of final energy consumption, buildings lie at the heart of France's climate strategy. This is supported by stricter performance monitoring, performance obligations in the non-residential sector (Tertiary and BACS decrees), increasingly ambitious construction standards (RE2020), and an accelerated renovation effort.

Since 2006[1], the Energy Performance Certificate (DPE) has been the reference tool for evaluating buildings. Reinforced in 2021 to become legally binding, its energy rating now has legal consequences in property transactions and rentals. It also serves as a lever for renovation policies and guides public financial aid. France's Energy Transition for Green Growth Act (2015) sets ambitious targets[2]:

-20% reduction in final energy consumption by 2030

-50% reduction by 2050

-30% reduction in fossil fuel use by 2030

These objectives align with the EU framework, notably the revised Energy Efficiency Directive (2023)[3], which requires member states to implement long-term renovation strategies and achieve an average annual reduction in energy consumption. However, France is going further by setting more ambitious targets than those required by the European Union, both in terms of reducing final energy consumption and phasing out fossil fuels.

Renovate, Monitor, Transform

France is acting on multiple levels:

- RE2020 governs new buildings, addressing both energy and carbon performance
- The Tertiary Decree mandates progressive reductions in energy use for buildings over 1,000 m^2, -40% by 2030, -50% by 2040, -60% by 2050
- The BACS Decree makes smart energy management systems mandatory starting in 2025 for certain buildings

[1] www.ecologie.gouv.fr/politiques-publiques/diagnostic-performance-energetique-dpe
[2] www.ecologie.gouv.fr/politiques-publiques/loi-transition-energetique-croissance-verte
[3] https://eur-lex.europa.eu/legal-content/FR

Renewable Energy Strategy

► Renewables are a core pillar of France's decarbonisation and energy sovereignty, supported by updated legislation and financial incentives to boost their development throughout France.

France's renewable energy policy aims to accelerate the deployment of solar, wind, and renewable heat while promoting on-site energy generation for homes and buildings. Laws such as the Climate and Resilience Act and the APER Law have created new technical, regulatory, and financial frameworks to scale up renewable capacity.

Renewable energy deployment in France is driven by multiple legislative frameworks, notably the Climate and Resilience Law (2021) and the Law on Accelerating Renewable Energy Production (APER, 2023). These policies set targets, streamline permitting procedures, and introduce new obligations for public and private actors. These measures address electricity generation, renewable heat, and building-level energy production and use, aiming to reduce reliance on fossil fuels and achieve climate neutrality by 2050.

National Objectives and Targets

France's renewable ambitions include:

- Multiply the installed solar capacity from 2022 by up to six times[1]
- Maintain the current development pace by adding 1.5 GW of onshore wind capacity annually[1]
- Significantly increasing renewable heat production (biomass, geothermal, solar thermal)
- Tripling on-site energy production of electricity by households and businesses

These targets contribute to meeting the EU's 42.5% renewable share in final energy consumption by 2030.[2]

Technical and Financial Integration

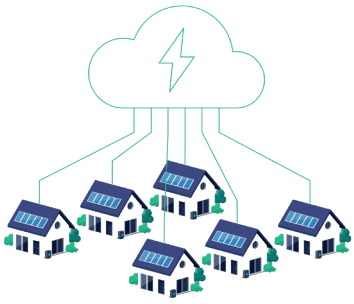
The APER Law and Climate and Resilience Law introduced:

- "Acceleration zones" where permitting is simplified for renewable projects
- Obligations to install solar panels on large car parks and new commercial buildings with an implementation schedule
- Promoting and supporting the development of agrivoltaics
- Financial support mechanisms: feed-in tariffs, tenders, investment subsidies (e.g., Fonds Chaleur)
- Frameworks for individual and collective on-site energy production and use, including energy communities and simplified grid access
- New governance structures to involve local authorities and citizens in project development

Key Figures and Implementation Tools

- Approximately 20% of France's electricity consumption was renewable in 2022[3]
- The carbon intensity of electricity generation in mainland France averaged 45 gCO_2e/kWh over the period 2010–2024 (*source: RTE*)
- France ranks among the top EU countries in renewable heat production (notably biomass)
- APER Law adopted in February 2023, operational as of mid-2023
- Complementarity with other measures: SNBC, Multiannual-Year Energy Programming (PPE), and the EU Fit for 55 Package

[1] Gouvernement, Planifier une France décarbonée
[2] Commission européenne, Objectifs pour 2030
[3] Ministère de la Transition écologique, Chiffres clés des énergies renouvelables, 30 août 2024



Calendar of areas subject to solarisation or greening requirements for roofs or shade structures		Before July 2023	Since July 2023	Since January 2025	From July 2026	From January 2028
A Buildings for commercial, industrial or craft use, or warehouses and sheds closed to the public	New construction	> 1000 m² - 30 %	> 500 m² - 30 %		> 500 m² - 40 %	> 500 m² - 50 %
	Renovation Extension		> 500 m² - 30 %		> 500 m² - 40 %	> 500 m² - 50 %
	Existing building					> 500 m² - 50 %
B Office buildings	New construction		> 1000 m² - 30 %	> 500 m² - 30 %	> 500 m² - 40 %	> 500 m² - 50 %
	Renovation Extension		> 1000 m² - 30 %	> 500 m² - 30 %	> 500 m² - 40 %	> 500 m² - 50 %
	Existing building					> 500 m² - 50 %
C administrative, recreational, sports, school or university buildings and hospitals	New construction			> 500 m² - 30 %	> 500 m² - 40 %	> 500 m² - 50 %
	Renovation Extension			> 500 m² - 30 %	> 500 m² - 40 %	> 500 m² - 50 %
	Existing building					> 500 m² - 50 %
D Covered car parks (accessible to the public)	New construction	> 1000 m² - 30 %	> 500 m² - 30 %		> 500 m² - 40 %	> 500 m² - 50 %
	Renovation Extension		> 500 m² - 30 %		> 500 m² - 40 %	> 500 m² - 50 %
	Existing building					> 500 m² - 50 %
E Outdoor car parks	New construction		> 500 m² - 30 %			> 500 m² - 50 %
	Existing building					> 500 m² - 50 %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Regulatory Tools

Energy Performance Certificate

► The Energy Performance Certificate (EPC) is a mandatory evaluation of a building's energy and climate performance. Rooted in EU directives and national regulations, it informs tenants and buyers, drives renovation policies, and determines legal obligations and restrictions on inefficient properties.

The Energy Performance Certificate has become a central instrument of France's decarbonisation policy, with reinforced obligations, legal enforceability, and significant impacts on property values and rental eligibility.

Introduced under the European Energy Performance of Buildings Directive (2002/91/EC, recast in 2010), the DPE was implemented in France in 2006 and extensively reformed by the Climate and Resilience Act and the 2021 methodological update. **It provides a double rating:**

- **Energy consumption (primary energy in kWh/m²/year)**
- **Greenhouse gas emissions (kg CO_2/m²/year)**

Since 1 July 2021, the DPE has been legally binding : tenants and buyers can challenge its accuracy in court.

Obligations and Legal Framework

- Mandatory for any sale or rental advertisement (mention of energy and climate classes)
- DPE valid for 10 years
- Energy-inefficient dwellings (classified F or G) are subject to restrictions:

- From 1 January 2023, G-rated properties consuming >450 kWh/m²/year in final energy cannot be rented
- From 2025, all G-rated properties banned from new leases
- From 2028, F-rated properties from new leases banned
- From 2034, E-rated properties from new leases banned

- Energy audit or DPE required in property deeds, notarial acts, and applications for government subsidies (e.g. MaPrimeRénov')
- Energy class E, F or G properties must carry out an energy audit before sale (mandatory since April 2023)

Effects on Property Value

- According to the National Observatory for Energy Renovation, 15.6% of dwellings in France are rated F or G ("energy poor households")[1]
- These properties can experience an average price discount of 10-20% in transactions[2]
- Renovation can raise ratings and restore value, supported by tax incentives and grants
- Higher-rated properties (A/B) increasingly command price premiums, particularly in dense urban areas
- Some banks adjust borrowing capacity and loan conditions based on the DPE rating

Key Figures and Implementation Tools

- About 13.7 million dwellings have been assessed, out of a total stock of 37 million homes[1]
- Revised DPE methodology effective since July 2021, no longer based solely on energy bills
- Approximately 5.8 million dwellings classified F or G as of 2024.
- ELAN Law (2018) made the DPE legally binding and established new disclosure requirements
- Complementary measures: Climate and Resilience Law, MaPrimeRénov', and renovation roadmaps under the SNBC

[1] Rapport de l'Observatoire National de la Rénovation Energétique, Le parc de logements par classe de performance énergétique, 1er Janvier 2024.
[2] https://www.seloger.com/data-dpe/

RE2020: Environmental Regulation Including Carbon Limits

► RE2020 introduces new environmental standards for all new buildings in France, using life-cycle analysis and climate resilience as core principles. It aims to reduce emissions, improve energy use, and ensure comfort in a warming climate.

France was the first country to introduce obligatory whole life cycle limit values. The RE2020 regulation sets an integrated framework for energy, carbon, and comfort, with stricter carbon thresholds in 2025, 2028, and 2031.

The RE2020 regulation emerged from a process of experimentation and methodological development, beginning with the HQE Performance initiative in 2011 led by Alliance HQE-GBC. This initiative tested the use of Life Cycle Assessment (LCA) to evaluate the environmental performance of buildings. Building on these foundations, the French government launched the E+C- (Energy Positive & Carbon Reduction) experimental framework in 2016 to bring to buildings that produce more energy than they consume and have reduced carbon footprint. Through these two stages, the sector was able to use standardized calculation methods, produce environmental data, and familiarize stakeholders with new sustainability metrics. This groundwork ultimately led to the implementation of the RE2020 regulation in 2022, marking a significant shift toward low-carbon and energy-efficient construction in France.

The RE2020 replaces the former thermal regulation (RT 2012) and applies to all new residential buildings. It has been gradually extended to offices and schools. The regulation introduces a broader environmental scope, addressing not only operational energy performance but also emissions linked to construction materials. RE2020 is based on three pillars:

- Energy efficiency and decarbonisation
- Reduction of life-cycle greenhouse gas emissions
- Indoor comfort

National Objectives and Targets

RE2020 contributes to France's climate targets through measurable thresholds and progressive tightening of standards. Key targets include:

- Limiting construction-related emissions
- Reducing energy-related GHG emissions to -30%
- Encouraging low-carbon contruction products and equipments and renewable energy sources
- Limit thermal disconfort during heatwaves[1]

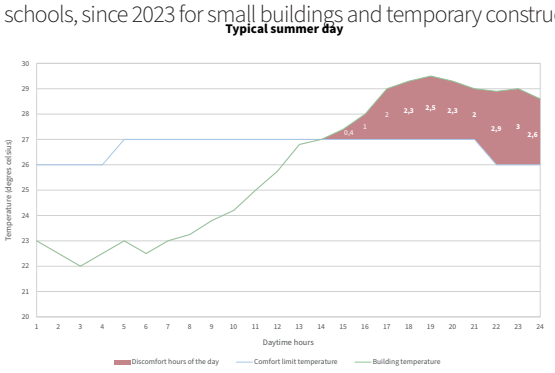
Technical and Financial Integration

RE2020 introduces a life-cycle approach to emissions assessment and mandates compliance with multiple performance indicators. Key features include:

- Life Cycle Assessment over a standard 50-year period
- Use of environmental products declarations (FDES or PEP) verified by independent third parties for construction products and equipment
- Certified simulation software to calculate indicators such as energy consumption, carbon emissions, and summer discomfort
- New verification requirements after construction: air-tightness tests and ventilation system performance

Key Figures and Implementation Tool

- 6 mandatory indicators, including Bbio (bioclimatic needs), Cep (primary energy use), and DH(discomfort hours)[2]
- A database for environmental product declarations: INIES
- Target: up to 30% lower energy needs compared to RT 2012
- Application timeline: since 2022 for housing, since mid-2022 for offices/ schools, since 2023 for small buildings and temporary constructions



[1] CEREMA, « Guide RE 2020 – Eco-construire pour le confort de tous », janvier 2024.
[2] Degree Hour (DH) is a thermal comfort indicator that measures the cumulative duration during which building occupants are exposed to temperatures exceeding a predefined comfort threshold. It functions like a counter, accumulating over the course of the year each uncomfortable degree felt per hour. The RE2020 threshold is 26°C at night, and varies between 26 and 28°C during the day, depending on local climate conditions.

Tertiary Decree: Mandatory Path to -60% by 2050

► The Tertiary Decree is a result-oriented policy that mandates a progressive reduction in energy use across non-residential buildings. It shapes the sector's climate action by requiring both owners and tenants to report their consumption data on the OPERAT platform.

All tertiary buildings over 1,000 m² must cut their energy consumption. The Tertiary Decree enforces this trajectory through binding targets, mandatory reporting, and monitoring via the OPERAT platform.


Office Building 1Pulsion, Toulouse @SDP

Since July 2019, the Eco Energy Tertiary scheme (Dispositif Éco Énergie Tertiaire – DEET) has required all tertiary-use buildings over 1,000 m² to gradually reduce their final energy consumption.

Two compliance pathways are available:

- Relative Targets: -40% by 2030; -50% by 2040; -60% by 2050 compared to a reference year chosen between 2010 and 2019
- Absolute Targets: Reach a predefined annual energy consumption level (set by ministerial order) based on the building's use (e.g. education, offices, logistics)

The decree applies to both building owners and leaseholders, thus requiring cooperation between stakeholders to meet the common targets.

OPERAT: A National Monitoring and Management Tool

Since 2022, all relevant stakeholdershave been required to submit their annual energy consumption data on the public platform OPERAT, operated by ADEME:

- Each year, data for the previous year must be reported
- OPERAT adjusts the figures based on weather conditions

It generates standardized performance reports and is set to become the national reference database on the energy performance of tertiary buildings.
In the future, OPERAT will enable the development of targeted and data-driven public policies, thanks to its comprehensive insight into the national building stock.

OPERAT
Observatoire de la Performance Energétique de la Rénovation et des Actions du Tertiaire

Net Zero Land Take by 2050: The *ZAN* initiative

► The Net Zero Land Take (ZAN) initiative aims to curb land artificialization and preserve natural and agricultural soils. By 2050, any new urbanized area must be balanced by the renaturation of an equivalent surface, embedding biodiversity protection and land efficiency at the heart of territorial planning.

France's ZAN framework sets a national trajectory toward zero net land artificialization by 2050, with an interim target of halving land take by 2034. It reshapes urban planning by promoting land-use efficiency, revitalizing existing buildings, and integrating biodiversity preservation into every stage of development.

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In order to combat the artificialization of land across the country — which is progressing at a rate of 20,000 to 30,000 hectares per year[1] — France has adopted a key objective in this regard: achieving Net Zero Land Take (ZAN, "Zéro Artificialisation Nette") by 2050. By this deadline, any newly artificialized land would have to be offset by the renaturation of an equivalent surface area. This goal addresses a major sustainability challenge, as land-use change was identified by the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) as the leading driver among the five main pressures causing biodiversity loss.[2]

Origin and Operation

This objective, introduced in 2021 by the Climate and Resilience Law, is implemented through planning and urban development documents at both the regional and local levels. Eventually, the ambitions of Net Zero Land Take will be distributed across territories and incorporated into Local Urban Plans, which serve as framework documents at the municipal level.

ZAN, along with its intermediate milestones (such as halving land artificialization by 2034), has a direct impact on the availability of land for construction. While this may seem like an economic constraint for some areas, it also serves as an incentive to promote land-use efficiency, valuing existing buildings and the reuse of already urbanized land.

Impact on Land Use

Within this new paradigm, a number of initiatives have emerged to rethink our approach to the existing building stock, particularly by tapping into vacant real estate as a new source of land:

- One such initiative is the Zero Vacant Housing ("Zéro Logement Vacant" tool, which helps municipalities identify both current and potential vacant homes and support their owners in reoccupying or renovating them
- More recently, the "Intensi'Score" indicator was introduced to assess how intensively a building is being used and to suggest ways to improve it

In June 2025, a new law was enacted to facilitate the conversion of office spaces into housing by removing certain regulatory or administrative obstacles and by creating a new "reversible" building permit.

[1] Zéro artificialisation nette (ZAN) : comment protéger les sols ? - Vie Publique

[2] IPBES Sustainable Use Assessment - 50,000 Wild Species Meet Needs of Billions Worldwide

EPR for Construction Products and Materials

► The REP PMCB scheme makes producers responsible for the end-of-life management of construction materials. By financing collection, sorting, and recycling, it drives the transition toward a circular and more sustainable construction sector.

Since 2022, France's REP PMCB regulation has made all producers and distributors of building materials accountable for their products' waste. It supports better waste recovery, fights illegal dumping, and promotes reuse and recycling to reduce the industry's environmental footprint.

In recent years, the construction sector in France has come under increased scrutiny due to its environmental impact, particularly its role in generating waste. To address this, France introduced the Responsabilité Élargie du Producteur pour les Produits et Matériaux de Construction du secteur du Bâtiment—REP PMCB. This regulation, part of the broader anti-waste and circular economy law (AGEC Law), took effect in 2022 and aims to revolutionize how construction and demolition waste is managed in the country.

A New Obligation for Industry Players

Under the REP PMCB, producers, importers, and distributors of building products are now legally responsible for the end-of-life management of the materials they place on the market. This includes financing and organizing the collection, sorting, and recycling of waste derived from these products. The goal is to reduce illegal dumping, support the reuse and recycling of materials, and transition toward a circular economy in the construction sector.

This responsibility is no longer optional. Any company that puts building products on the French market—whether manufactured locally or imported—must either join an approved eco-organization or establish its own individual compliance scheme. Failure to do so can result in financial and legal penalties.

Different Waste Types, One Objective

The REP PMCB distinguishes between two main categories of construction waste :

- Inert waste: These are materials that do not undergo physical, chemical, or biological transformations, such as concrete, bricks, tiles, and ceramics
- Non-inert waste: This includes materials like insulation, plastics, metal, wood, windows and flooring

Both categories are now subject to improved collection and sorting infrastructures, funded by eco-contributions paid by obligated producers.

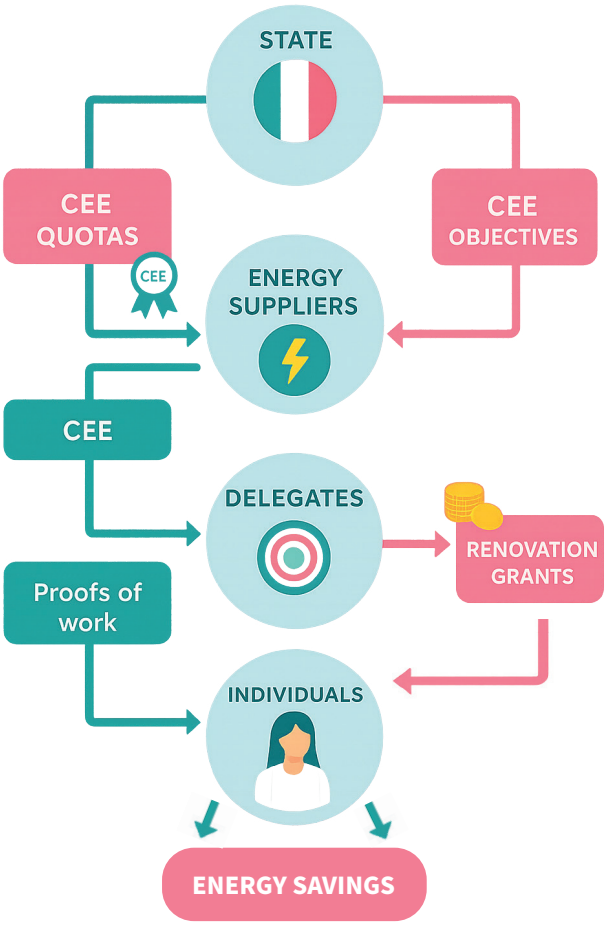
The REP PMCB represents a structural change in France's approach to construction waste. By involving industry stakeholders in the entire lifecycle of building products, it seeks to significantly reduce the environmental footprint of the construction sector.

Energy Savings Certificates

► ESC (CEE) are a key lever in energy renovation policy. They compel energy suppliers to actively support households, landlords, and businesses in improving building energy performance.

By requiring energy suppliers to promote and support building renovation, the Energy Savings Certificates (ESC) scheme has enabled millions of renovation works in both the residential and tertiary sectors. The current target exceeds 3.100 TWh cumac[1] in energy savings by 2025.

HOW ESC (CEE) WORK



Launched in 2006, the Energy Savings Certificates (ESC, Certificats d'Économies d'Énergie, CEE) scheme is based on a straightforward idea: energy suppliers (electricity, gas, fuel oil, transport fuels, etc.) are legally obligated to help their customers to save energy.[2]

Over a defined obligation period (3 to 4 years), suppliers must demonstrate that a required volume of energy savings has been achieved through:

- Standardized operations (e.g. insulation, heating system upgrades, efficient lighting) yielding fixed energy savings
- Specific operations, often industrial, whose real savings are validated through audits

In practical terms, suppliers must:

- Provide financial incentives or rebates for insulation, heating replacement, lighting upgrades, or energy regulation systems
- Run targeted assistance campaigns for low-income households or public buildings

A Historic Lever for Renovation

Since its creation, the ESC scheme has enabled millions of energy renovations, especially in single-family and multi-family housing, public buildings such as schools, offices and commercial premises.

Over 480,000 energy-poor households have received support through dedicated programs within the scheme.

A Strengthened Ambition for 2022–2025

The fifth obligation period of the ESC scheme (2022–2025) sets a target of 3,100 TWh cumac in energy savings to be achieved by the end of 2025. This corresponds to tens of millions of renovation actions, with a focus on:

- Private residential and tertiary buildings
- Combating energy poverty as a priority
- New support programs promoting energy sobriety, consumption monitoring, and the effectiveness of renovation work

[1] «kWh cumac» is a unit that combines the cumulative energy savings achieved over the entire lifespan of a piece of equipment, adjusted over time to reflect their decreasing value. Each year, the savings are discounted by a 4% rate (discount factor of 1.04), reflecting the lower present value of future savings compared to those achieved immediately.

[2] https://www.ecologie.gouv.fr/politiques-publiques/dispositif-certificats-deconomies-denergie

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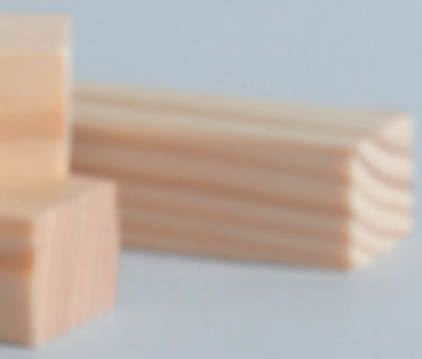
4.

Technical Tools & Methods



INIES: The Reference Database for Environmental Assessment of Buildings

► **A key tool for sustainable construction and environmental regulation, INIES provides verified, open-access life cycle data that empowers the building sector to meet RE2020 standards and accelerate the transition toward low-carbon, eco-designed buildings.**

The INIES database centralizes environmental, health, and technical data on construction products and equipment to support building professionals in delivering environmental quality and regulatory compliance for their buildings.

Created in 2004, INIES is the reference database that compiles environmental declarations for construction products (Environmental and Health Declaration Sheets – FDES) and building equipment (Product Environmental Profiles – PEP). This data reflects the environmental impacts of products throughout their entire life cycle.

An Essential Tool for RE2020

With the implementation of the 2020 Environmental Regulation (RE2020) on January 1, 2022, INIES has become indispensable. The information it provides is used to calculate the life cycle assessment (LCA) of buildings - including their Global Warming Potential - and to meet the regulatory requirements for new construction.

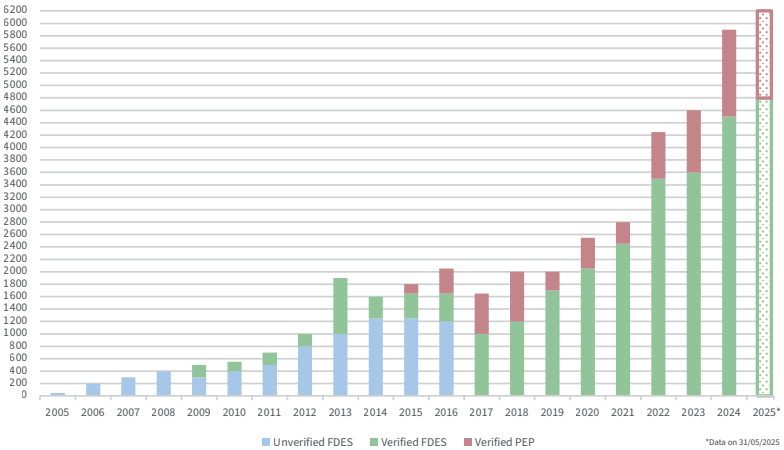
Reliable, Verified, and Accessible Data

The data in INIES is produced according to recognized standards (various amendments of standard NF EN 15804 and its national annex for FDES; standards EN 50693, PEP PCR ed3, and PEP PCR ed4 for PEPs…). These standards quantify the environmental impacts of a product throughout its life cycle — from raw material extraction to end-of-life (demolition, recycling, etc.). All data are independently verified by third parties and made freely available online via the platform www.base-inies.fr. With over 6,500 environmental declarations covering around 350,000 construction products and equipment, the database offers a comprehensive resource for the sector.

A Collective Commitment to Eco-Design

INIES brings together manufacturers, distributors, businesses, public authorities, engineering firms, architects, and other building professionals around a shared goal: to design and construct more sustainable, resource-efficient buildings that are better adapted to today's climate and environmental challenges.

Number of FDS and PEP available in INIES



Access to Data Tools & Platforms

► **Open-access digital tools now provide reliable, standardized data to monitor and compare the environmental performance of France's real estate sector—driving transparency and informed ecological transition across all assets.**

Numerous digital tools are available to track the evolution of the environmental performance of the French real estate sector. A significant share of these tools offers open-access data — an essential effort to both ensure the reliability and standardization of environmental data access. This is crucial for assessing the performance of an individual asset as well as for relying on comparable benchmarks, whether it concerns greenhouse gas (GHG) emissions, air quality, land artificialization, waste and more.

Overall Environmental Challenges

- First and foremost, the French Agency for Ecological Transition (ADEME, Agence De l'Environnement et de la Maîtrise de l'Energie) provides access to harmonized, reliable, and transparent sector-wide data via BatiZoom, the observatory for the ecological transition of the building sector. This platform presents key figures and statistical indicators relating to the sector's ecological transition.
- The General Secretariat for Ecological Planning (SGPE) also maintains a barometer of ecological planning, with a section dedicated to the building sector.
- France also developed a National Building Database (BDNB) which allows anyone to access detail data on French building stock.
- A place for sharing public data accumulated by the administration as part of its mission to monitor the implementation of RE2020.

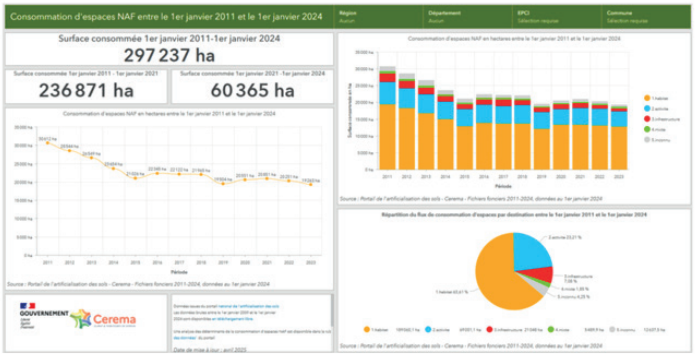
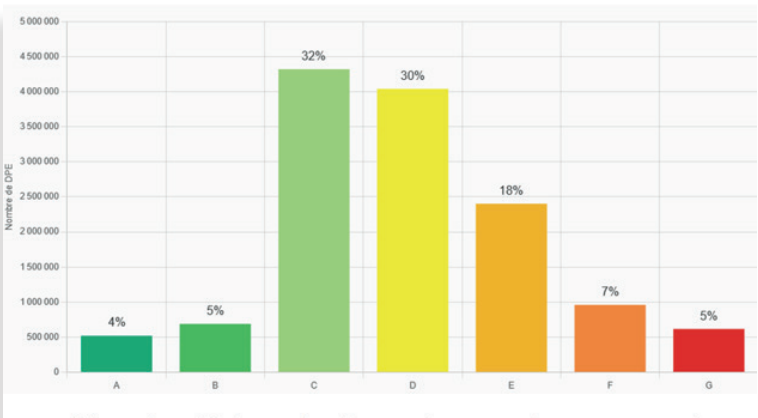


Figure 2: Preview of Cerema's dashboard monitoring the consumption of natural, agricultural, and forest areas - Source: Cerema

Figure 1 : Breakdown of ECD labels in % of total (Housing)
Source : Observatoire DPE-Audit



Energy Dedicated Platforms

In addition, ADEME also operates a publicly accessible platform for tracking Energy Performance Certificates (EPCs), compiling all EPCs carried out by certified professionals since July 1, 2021. Furthermore, in line with the Tertiary Decree, a complementary platform named OPERAT has been developed. It requires owners and tenants of large tertiary buildings to report their energy consumption. This platform enables them to track the evolution of their energy performance and compare it against buildings of the same category or subcategory. Some initiatives even advocate for issuing a certificate when a building follows an ambitious and efficient trajectory—potentially unlocking green financing for the corresponding asset.
In addition one may mention : National Observatory on Energy Poverty

Other Topics

When it comes to land artificialization, the Centre for Studies and Expertise on Risks, the Environment, Mobility, and Urban Planning (Cerema) maintains a dashboard monitoring the consumption of natural, agricultural, and forest areas. This tool allows for detailed tracking of the pace of land artificialization at national, regional, or local scales.

Labels & Certifications: A Rich Panorama

► France's ambitious and diverse real estate regulations are complemented by voluntary initiatives that enhance buildings' environmental, social, and economic performance throughout their life cycle.

As previously discussed, the French real estate ecosystem is guided by a regulatory framework that is genuinely ambitious—but uneven across different thematic areas. To build on this framework and address its blind spots, many voluntary initiatives have emerged.

Law-Related Certifications and Labels

Some of these are state-led and directly extend the regulatory framework. For instance, the E+C- label was long used to distinguish buildings that anticipated the new environmental regulation (RE2020), which has since come into force. Likewise, the "Low-Consumption Building – Renovation" (BBC Rénovation) and "High Energy Performance – Renovation" (HPE Rénovation) labels, launched in 2009, were established to define benchmarks for energy performance. In 2023, a public method was also rolled out to promote new construction projects of over 500 m^2 SDP located in France, which incorporate bio-based materials, and to promote the CO_2 capture that this use of materials enables. (Méthode Bâtiment neuf biosourcé)

However, a large share of building-related labels and certifications originates from associations or sector-based organizations.

Environmental Certifications

There are also certifications designed to address a broad range of sustainability challenges across the entire life cycle of buildings. The HQE® (High Environmental Quality) certification is the most widely recognized in France and has international reach, comparable to BREEAM and LEED.

HQE® was developed in the 1990s through a collaborative process led by building professionals within the HQE Association. Structured around four pillars - quality of life, environmental performance, economic efficiency, and responsible project governance - HQE® supports buildings throughout their wholelife cycle, combining environmental impact reduction with improved occupant well-being. It applies a comprehensive set of criteria, including energy management, carbon reduction, water use, resource and waste management, indoor air quality, occupant comfort (acoustic, thermal, and visual), biodiversity, resilience, landscape integration, climate change adaptation, and resilience. With over 132,000,000 sqm certified in more than 26 countries, HQE® contributes to the broader uptake of voluntary sustainability standards and supports alignment with sustainable finance objectives. HQE® certifications have developed Taxonomy Profiles as a means of proof to demonstrate compliance of real estate projects with the EU Taxonomy requirements.
Other certifications are more regionally focused, such as those for sustainable neighborhoods or buildings.

Specific Labels

Additionally, stakeholders can draw from a broad range of specialized labels and certifications. For example, regarding decarbonization, the Bâtiment Bas Carbone (BBCA – Low Carbon Building) label, developed by the association of the same name, targets the reduction of buildings' carbon footprints. Its European counterpart is the Low Carbon Building Initiative (LCBI).The State label for new buildings integrating biobased construction products, has been updated in 2024. Concerning biodiversity, the BiodiverCity label is designed to measure and promote the integration of biodiversity in real estate projects. Other initiatives focus on circular economy practices (Circolab), or on comfort and well-being (Osmoz, Intairieur, FitWel).

Other Initiatives

More recent developments aim to assess the environmental potential of an asset. For instance, Goflex evaluates and identifies the potential for electrical flexibility in tertiary buildings, while the ER Score (currently under development) seeks to assess and highlight renewable energy opportunities in buildings.

Sustainable Real Estate Labels and Certifications

ENERGY / CLIMATE

Effinergie

effinergie

BBC effinergie rénovation
Basse consommation & bas carbone

effinergie Patrimoine Expérimental

ACTIVE SCORE CERTIFIED

Bâtiment BIOSOURCÉ

International

MINERGIE®

MINERGIE-A®

MINERGIE-P®

Passivhaus Institut

EnerPHit

Bas-carbone

LABEL BAS CARBONE

BÂTIMENT BBCA BAS CARBONE

LCB INITIATIVE

E+ C- ÉNERGIE POSITIVE & RÉDUCTION CARBONE

GENERAL

HQE Family

HQE BÂTIMENT

HQE BÂTIMENT DURABLE

NF HQE HABITAT

BÂTIMENT ÉNERGIE ENVIRONNEMENT LOGEMENT NEUF

Other International

LEED USGBC

BREEAM

DGNB

Label Promotelec Habitat Neuf

Label Promotelec Rénovation Responsable

Regional

bdf

bdo Bâtiment Durable Occitanie

bdbfc

bdm Bâtiments Durables Méditerranéens

abdna

COMFORT WELLBEING

WELL

RESET

Osmoz

HS2 Haute Sécurité Santé

LABEL LA ACCESSIBILITÉ

fitwel

INTAIRIEUR

Bac Bâtiment accessible certifié

CIRCULAR ECONOMY

2EC CONSTRUCTION ET AMÉNAGEMENT

Label Circolab

ECOCYCLE Eco-conception Economie responsable Réemploi des matériaux Gestion de déchets

BIODIVERSITY

EcoJardin la référence de gestion écologique

biodivercity

effinature CERTIFICATION DE LA BIODIVERSITÉ

CONNECTIVITY

R2S READY2SERVICES

WiredScore CERTIFIED

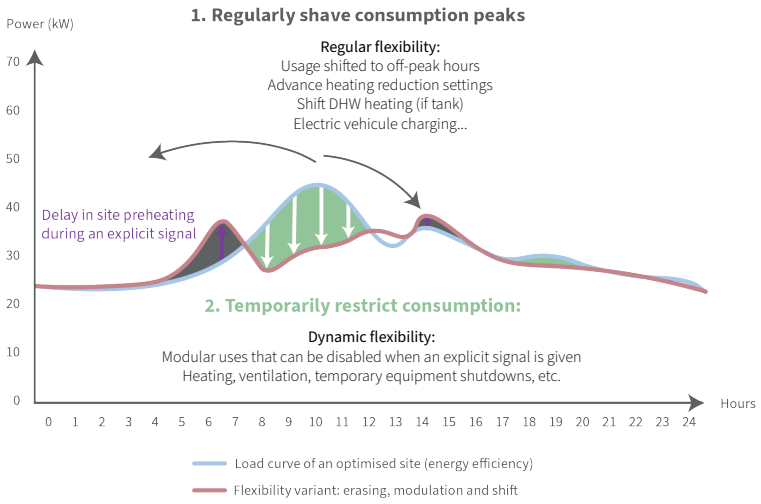
SmartScore

GENERAL: Labels and certifications whose frameworks cover a wide range of environmental, social, and economic themes. They take into account both climate change adaptation and mitigation. Most of them also address issues such as user comfort, accessibility, project management transparency, and overall economic performance.
ENERGY / CLIMATE: Labels and certifications mainly addressing climate change issues through their impact on construction and energy performance, as well as adaptation to climate change.
COMFORT & WELL-BEING: Labels and certifications focused on meeting the material and psychological needs of occupants (lighting, thermal comfort, services provided, indoor air quality, etc.).
CONNECTIVITY: Labels and certifications that assess the building's level of digital connectivity, whether in terms of network infrastructure, cybersecurity, or energy management through data collection, processing, and consumption.
BIODIVERSITY: Labels and certifications promoting the protection and restoration of biodiversity in all its forms within real estate projects and assets.
CIRCULAR ECONOMY: Labels and certifications that support the effective integration of circular economy principles, beyond the regulatory obligations set by the RE2020 building standard.

Energy Flexibility

► **Flexibility is a strategic pillar combining automation, consumption control, and incentives to balance the French energy system and accelerate decarbonisation.**

France is advancing energy flexibility as a core component of its decarbonisation strategy. Through a mix of regulation, certification, and innovation, the country empowers buildings and businesses to actively manage energy demand — transforming consumption into a lever for grid stability, cost efficiency, and sustainability.



Energy flexibility includes all measures that adjust electricity demand in response to signals such as price variations or grid constraints. France promotes flexibility through the Multi-year Energy Programming (PPE) and the Climate and Resilience Law, encouraging consumers and operators to play an active role in balancing supply and demand.

Regulatory Framework and Programmes

- BACS Decree: requires large non-residential buildings to install Building Automation and Control Systems by 2025. These systems monitor, record, and automatically adjust heating, cooling, and ventilation, enabling continuous optimisation
- Flex Ready: a national label certifying that equipment and installations are designed to be “ready” for flexibility participation (load shedding, dynamic tariffs). It helps project owners choose compliant solutions
- GOFLEX Programme: public support for innovative flexibility projects, pilot schemes combining technology, contractual arrangements, and local stakeholder engagement
- Tertiary Decree: mandates progressive energy reductions in buildings over 1,000 m², requiring dynamic consumption monitoring and control to meet targets (-40% by 2030)[1]

Real-Time Management and Applications

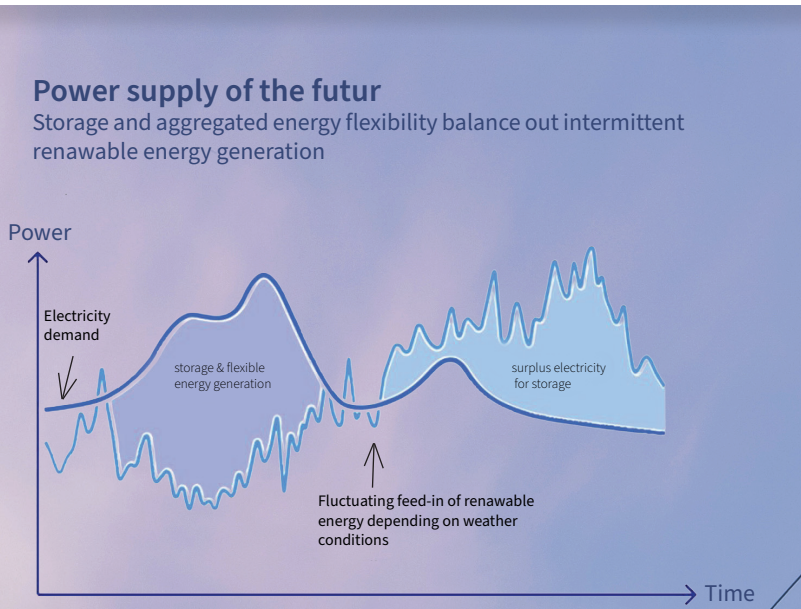
Flexibility in practice allows:

- Load shedding: temporarily reducing consumption during peak demand to avoid strain on the grid
- Load shifting: moving usage to off-peak hours to benefit from lower tariffs
- Dynamic pricing response: adjusting equipment and processes in real time based on hourly price signals
- On-site generation and use optimisation: combining solar generation and storage to smooth demand profiles

In France, these actions are supported by RTE balancing mechanisms and dedicated tenders for demand-side response.

Key Figures and Implementation Tools

- Over 920 000 sites enrolled in demand response programmes.[2]
- BACS Decree: compliance deadline 1 January 2025 for affected buildings
- Tertiary Decree: more than 740 million m² of floor area subject to energy performance targets[2]
- Flex Ready Label: standardises readiness criteria for new and renovated buildings
- GOFLEX: co-financed pilots demonstrating practical benefits and business models for flexibility

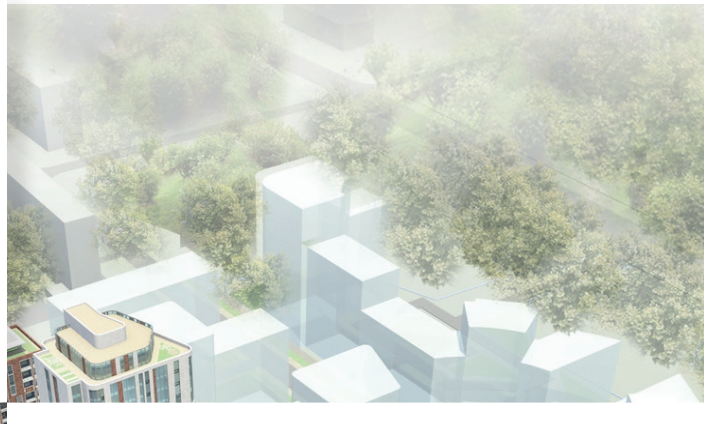


[1] Ministère de la Transition écologique, « Eco Energie Tertiaire », 23 janvier 2023
[2] CEREMA, « Eco énergie tertiaire : plus de 740 Millions de m² de locaux soumis aux obligations du dispositif », 21 février 2024

CAP 2030: Designing Future Construction Sustainability

► CAP 2030 brings together public and private stakeholders to co-create a shared, forward-looking framework that extends beyond current regulation — integrating new dimensions of sustainability, resilience, and innovation for the buildings of tomorrow.

Through a voluntary and collective approach, CAP2030 aims to co-develop a shared reference framework consistent with RE2020 regulation that integrates new key themes for eco-design and building resilience.



A Collective and Open Project

Launched in October 2023, CAP 2030 is led by Alliance HQE-GBC, Effinergie, and the Collectif des Démarches Quartiers Bâtiments Durables associations, with support from the French Ministry in charge of Housing, ADEME (The French Agency for Ecological Transition) CSTB (Scientific and Technical Center for Building), and the Plan Bâtiment Durable. It is based on a collaborative and inclusive approach, engaging over 1.000 stakeholders across nine thematic working groups.

A Voluntary Framework that goes beyond Energy and Carbon

While RE2020 sets an ambitious environmental trajectory focused on energy and carbon, CAP 2030 goes further by addressing additional sustainability challenges, including:

- Biodiversity, water, and circular economy
- Indoor environmental quality
- Climate change adaptation
- Low-tech design approaches
- Performance based on measured outcomes

The goal is to develop a Common Reference Framework (CRF) for sustainable building practices, that will not be regulatory, that promotes experimentation, professional upskilling, and innovation within the sector.

A Practical and Evolving Tool for the Buildings Sector

The first version of the CRF is expected in 2025. It will be a practical tool grounded in real-world data, designed to apply to all new buildings across France. It will support pilot projects through existing certification schemes, labels, and initiatives led by the project's partner organizations — encouraging experimentation and continuous improvement in sustainable building practices.
In conclusion, CAP 2030 is an open, structuring, and educational initiative aimed at preparing the future of sustainable building in France — beyond regulatory requirements alone.

Transformation of Existing Buildings

► The transformation of existing buildings is a strategic lever for the ecological transition and housing policy. France is equipping municipalities, developers, and property owners with legal and technical instruments to convert offices and other premises into housing and reduce the need for new land development.

Halle Pajol in Paris, one of the first Parisian eco-districts to mix usage functions.

France is stepping up its efforts to transform underused buildings into housing, in response to the housing crisis, declining office occupancy, and land-use reduction targets. New laws and policy tools now support adaptability, reconversion of the building uses, and data-driven planning.

In December 2024, 9 million sqm of office space in France were vacant[1]. To bridge the gap between this unused space and the housing crisis, the government launched a national strategy to transform existing buildings into housing.

The strategy relies on three axes:

- Reversibility and functional transformation of existing buildings
- Addressing building vacancy and underuse, especially in dense areas
- Avoiding land artificialisation through renovation and reuse rather than new construction

Technical and Financial Integration, shifting from unanimity to majority

- Public-private call to support local authorities in converting unused spaces into housing
- Transformation law of June 2025: introduces legal presumptions in favour of residential conversion and allows adaptive urban rules in priority zones
- Tools include reversible permits, PLU flexibility, co-financing agreements, and a national vacancy observatory

Key Figures and Implementation Tools

- Reversible building permits to anticipate future conversion
- Simplified co-ownership voting rules for mixed-use buildings enabling faster transformation
- Urban Partnership Projects: funding option through urban development agreements
- Monitoring platform to identify convertible sites and track vacant buildings
- Legal streamlining to support fast-track permits and urban rules exemptions for local authorities

[1] Consortium des Bureaux en France· "2 million square meters of office buildings empty for more than two years in France"

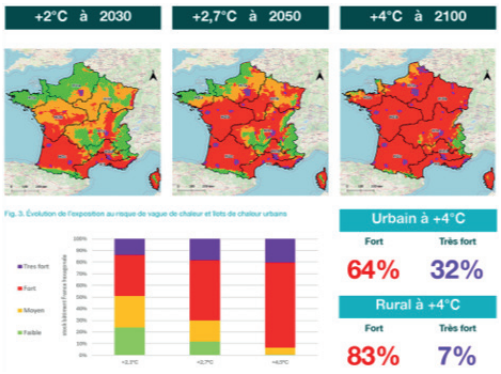
5.


Adaptation
& Territorial
Justice

Mapping Climate Risks to Better Adapt Buildings

► **In response to the intensification of climate-related hazards, the DRIAS portal provides essential forward-looking data to map local risks, identify the most exposed buildings, and guide renovation and adaptation strategies for the real estate sector.**

France is developing forward-looking climate datasets to anticipate the physical impacts of climate change on buildings. Droughts, heatwaves, floods, and wildfires are increasing the vulnerability of the built environment.



Climate Data to Anticipate Risks

The DRIAS portal (National Portal for Climate Projections), operational since 2010, provides forward-looking datasets derived from scientific research programs. In 2023, it integrated a new dataset aligned with the Reference Warming Trajectory for Climate Change Adaptation (TRACC), preparing France for a +4 °C climate scenario. [1]

The DRIAS2020 dataset includes 30 high-resolution simulations (8 km), combining various IPCC RCP scenarios and time horizons to assess the local evolution of key climate indicators.

What Risks for the Built Environment?

Heatwaves and Urban Heat Islands - In a +4 °C scenario, 93% of the national building stock could face high or very high exposure. In urban areas, exposure could reach 96%, due to building density and urban heat island effects.[2]

Drought and Clay Shrink-Swell Risk (RGA) - Single-family homes and rural areas are most affected. At +4.5 °C, more than 70% of rural buildings could face very high risk of structural damage linked to soil shrink-swell phenomena.

Wildfires - The risk is expanding beyond the Mediterranean region. In a +4 °C scenario, 63% of rural buildings could be exposed to moderate to high wildfire risk. Forest-edge urbanization increases exposure.

Flooding from Extreme Rainfall - At +4 °C, 50% of the building stock could face high or very high flood risk, due to soil saturation and the urbanization of flood-prone areas. In cities, 53% of buildings may be highly exposed. [5]

What About Overseas Territories?

France's overseas territories face similar hazards as mainland Europe, but with more pronounced warming, coastal erosion, and ocean acidification. In regions such as the Antilles and the Indian Ocean also face unique challenges: cyclone risks are expected to rise[3]. The combination of multiple hazards magnifies the threat to buildings, especially in territories already socially and economically vulnerable.

[1] www.adaptation-changement-climatique.gouv.fr
[2] OID, I4CE, EcoTRACC - Evaluation de l'exposition aux aléas climatiques du parc de bâtiments en France hexagonale
[3] https://reseauactionclimat.org/drom-com-les-outre-mer-en-premiere-ligne/

Regulatory Tools to Support Resilience

► France is equipping itself with structuring tools to anticipate the effects of climate change: the TRACC reference trajectory, the Cat Nat insurance scheme, coastal retreat exposure zones, and innovative land adaptation mechanisms.

France is strengthening its capacity to anticipate climate risks and protect assets, territories, and people.

An Adaptation Reference Pathway to Guide Action

Since March 2025, France's 3rd National Climate Change Adaptation Plan (PNACC-3) has been based on a new reference scenario: TRACC, which models a +4 °C average warming in mainland France by 2100.
The TRACC pathway aims to coordinate adaptation across all sectors (urban planning, infrastructure, buildings, agriculture…) by revising standards, integrating hazards into land-use planning documents, and supporting vulnerability assessments for both business sectors, and territories.

A Natural Disaster Insurance Scheme

Since 1982, France has implemented a system for compensating damages from climate-related disasters through the Cat Nat insurance scheme[1]. This scheme is built on a public-private model:

- Insurers collect a mandatory surcharge on every home insurance contract
- The State, via the Central Reinsurance Fund (CCR), provides a public guarantee

Compensation is granted for damage caused by eight specific hazards, including floods, droughts, landslides, and cyclones, once an interministerial decree declares a natural disaster[2]. This decree is issued following a request from the affected municipality and a technical assessment.
This regime is founded on the principle of national solidarity: all insured parties contribute to the fund, even those living in low-risk zones.

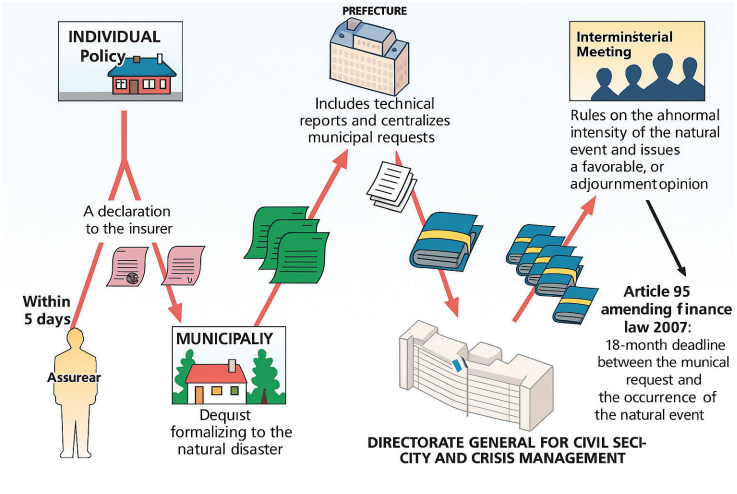
A Legal Framework for Coastal Retreat

Coastal erosion affects many regions and calls for tailored land-use management strategies.
The ZERTC (Zones Exposed to Coastal Retreat) are integrated into local land-use plans (PLU) and define two risk-based perimeters[3]:

- Within 30 years: restrictions on new construction
- Between 30 and 100 years: possible obligation to restore the land to its natural state

To support this transition, an innovative tool has been introduced: the Real Right Lease for Coastal Erosion Adaptation (BRAEC).[4]
This lease, agreed between a local authority and an occupant, allows temporary use of a property in a risk-prone area, with planned future relocation. It provides legal security for temporary occupation while preparing the return of the land to nature.

[1] https://cepri.net/les-outils-a-votre-disposition
[2] www.cerema.fr
[3] https://outil2amenagement.cerema.fr
[4] https://outil2amenagement.cerema.fr



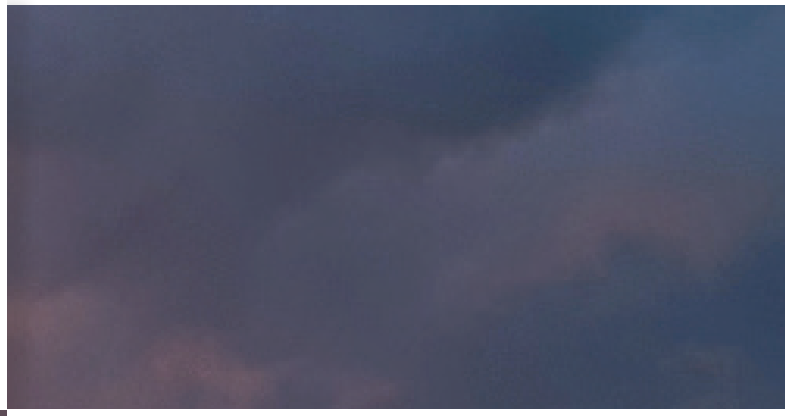
6.

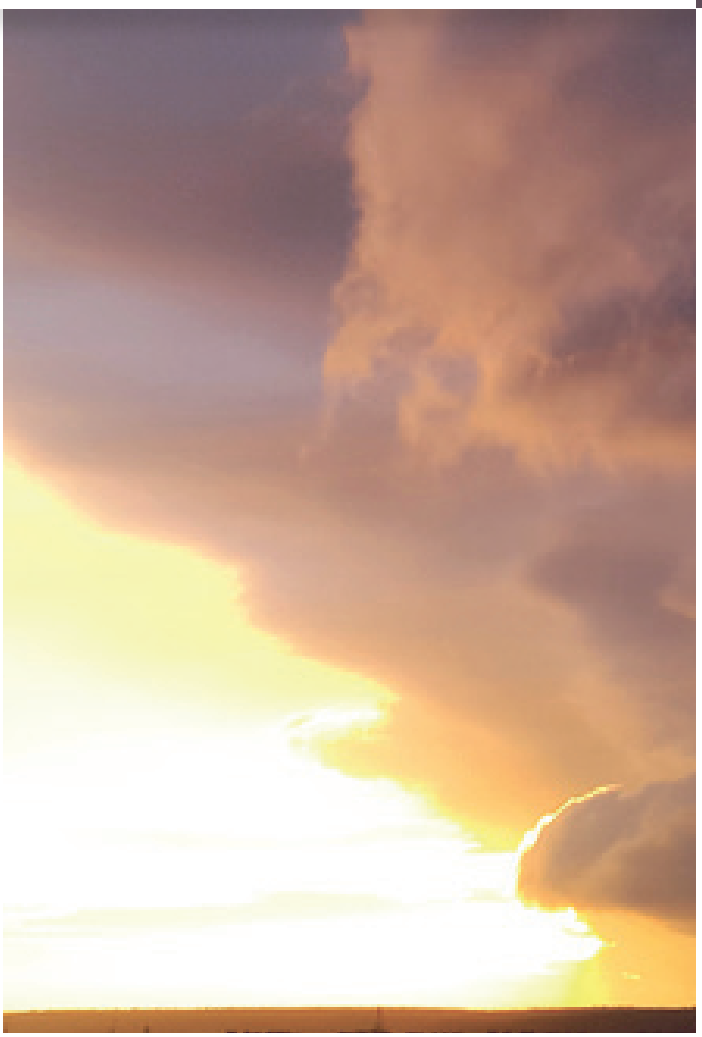
Actors & Organisations

Public Actors for Climate & Buildings

► France's climate and building transition is driven by a coordinated network of public institutions that regulate, advise, and support the shift toward near-zero-emission and climate-resilient buildings — ensuring alignment between policy, innovation, and implementation.

Climate action in France's building sector is anchored in a robust institutional ecosystem, from advisory councils to technical agencies, ensuring that mitigation and adaptation are embedded across all levels of policy and practice.





Control and Advice Bodies

The High Council on Climate (HCC – since 2018) is an independent body issuing advices and recommendations to the government on the delivery of public measures and policies aimed at reducing France's greenhouse gas emissions, and climate change adaptation, including on the building and construction sector. Its purpose is to provide independent insight on government climate policy.

The Superior Council for Construction and Energy Efficiency (CSCEE – since 2015) advices the government on policies related to construction, ensuring that regulations are adapted to sustainable development objectives.

Department of Ministries, Regulatory Authorities, and Building Owners

DHUP directorate of ministries in charge of housing and ecological transitions, coordinates and implements national policies in housing, urban development, and landscape, aiming for a sustainable, livable, and inclusive environment for all citizens. DHUP is in charge of technical regulation of buildings including energy and GHG performance of buildings, quality of building materials, circularity, and use of bio and geo based materials. Leads regulations and plans such as: RE2020, and REP.

DGEC General Directorate of the ministries in charge of energy and ecological transition, coordinates and implements national policies in energy and climate. DGEC is in charge of energy efficiency of equipments, renewable energies... It leads regulations and plans such as for climate: SNBC, PNACC; or for energy: PPE, Sufficiency plan and CEE scheme.

DGOM (for overseas territories) and the Ministry of Culture (for heritage buildings and architecture) are also involved in defining technical regulations.

DIE, the national state real estate department, represents the State as the owner responsible for managing more than 190,000 buildings covering 95 million square meters. It works toward the ecological transition of State-owned real estate through decarbonization and climate change adaptation measures. The DIE should evolve into a real estate holding company.

DGE, the General Directorate for Enterprises, of the ministry of finance, manages with Bpifrance the Construction Accelerator, which is part of a zero-carbon trajectory by 2050, supporting the digital and environmental transformation of the construction sector with a focus on sustainable buildings.

Agencies/Public Operators: Service and Support Providers

ADEME, the French Agency for Ecological Transition since 2020, has a building division that brings together experts in several fields: energy renovation, new construction, environmental performance, circular economy, innovation, and regulation. It is responsible for organizing and sharing building-related data in open data form, including the management of the DPE/Audit Observatory, the OPERAT database, and the National Observatory of Energy Poverty (ONPE). It manages also grant programs (PIA) to accelerate the ecological transition in the building sector and promote sustainable innovations in construction.

CSTB, Scientific and technical center for buildings is a public industrial and commercial institution under the supervision of the ministries responsible for construction and research. It plays a major role in research, evaluation, certification, testing, and dissemination of knowledge in the building sector. CSTB helps envision the buildings and cities of tomorrow, anticipates the effects of climate change, and supports the transition of the sector toward sustainability.

CEREMA has been since 2022 a public institution shared between the national State and local authorities. It has buildings and international divisions providing expertise. It leads the Carnot Clim'adapt institute, a center of expertise on adaptation to climate change serving businesses and local authorities.

ANAH, the National Housing Agency, is a public institution created in 1971, whose primary mission is now to improve the energy performance of private housing and to combat energy poverty, particularly since 2020 and the creation of MPR, through grants to households and the coordination of France Rénov'.

Decarbonisation Networks for the Building Sector

► **France's building sector benefits from a networked approach to decarbonisation, with initiatives embedded in both local and national contexts. These networks, often structured as non-profits, offer support, training, and shared benchmarks that can inspire similar ecosystems abroad.**

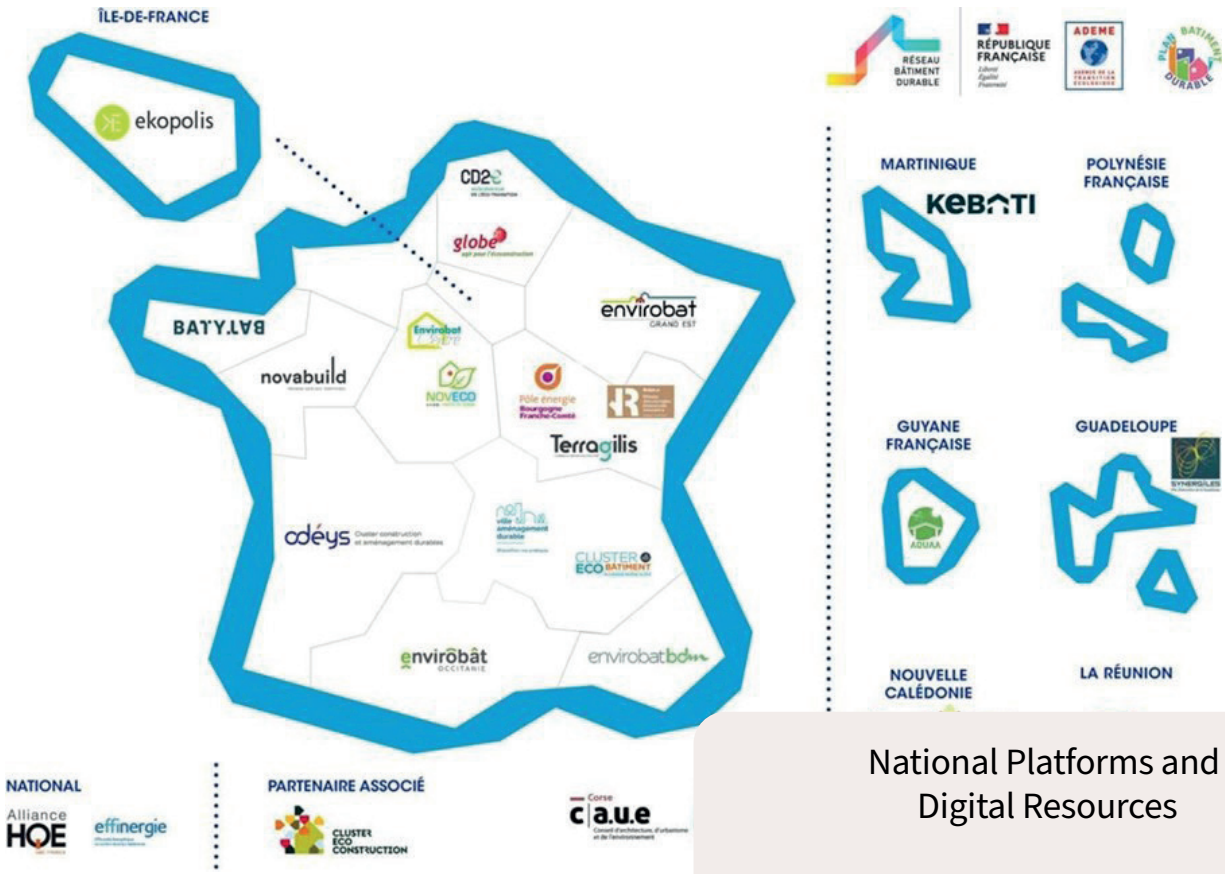
Across its territories, France has developed a rich ecosystem of regional and national networks dedicated to advancing low-carbon construction. These platforms support professionals, promote innovation, and facilitate knowledge transfer — laying the groundwork for scalable solutions.

To accompany its ambitious environmental regulations and to achieve carbon neutrality, France has developed a robust landscape of support structures for sustainable construction. These networks emerged from a dual need: assisting professionals in implementing low-carbon practices and nurturing a collective learning dynamic around ecological transition. Each region has developed its own model, often with public support, while national platforms complement local efforts with broader visibility and thematic expertise. The result is a multi-layered system that facilitates experimentation, feedback loops, and large-scale dissemination of good practices.

Key Regional Networks

Structured from 2009 onwards by the Sustainable Building Plan and the French Agency for Ecological Transition (ADEME), and often supported by regional governments, these networks now form a cohesive ecosystem (24 regional resource centres focused on sustainable construction, districts and renovation). Local centres provide practical assistance, while national platforms offer broader visibility, thematic expertise, and coordination. The result is a multi-layered system that encourages experimentation, creates feedback loops, and enables large-scale dissemination of best practices.

The network's mission is to facilitate the transition of the building sector by empowering professionals, encouraging cross-regional collaboration, and promoting feedback and knowledge sharing. Its key missions include Territorial coordination of stakeholders (public authorities, developers, engineers, artisans, etc.); Dissemination of technical resources and know-how ; Promotion of innovation through best practices, pilot projects, and public calls ;Training and awareness-raising on key topics such as carbon, summer comfort, bio-based materials, and circular economy.
This national-local structure ensures consistent objectives while allowing for flexibility in addressing regional specificities. The network also organises the National Sustainable Building Congress (CNBD) every two years.



An Interregional Collective for Sustainable Building and Neighbourhood Approaches

Within the Réseau Bâtiment Durable, several regional organisations have joined forces to build a shared framework: the Collectif des Démarches Quartiers et Bâtiments Durables. The collective's objectives include to share tools and knowledge – such as evaluation frameworks, training resources, and digital platforms; Co-constructing and harmonising practices across regions to ensure consistency and quality; Enhancing national visibility of locally developed approaches to sustainable building and neighbourhood design; Pooling resources to respond jointly to national and European calls for projects. The collective promotes a peer-driven, participatory approach to environmental evaluation, grounded in continuous improvement and strong local engagement. It is now a key example of territorial cooperation in the service of low-carbon and resilient construction. To date, 1,320 projects in sustainable building approaches, 35 in sustainable neighborhoods have been carried out and 6,500 professionals have been supported.

Alliance HQE-France GBC and Effinergie are two national associations part of this network as well.

Knowledge Transfer and International Potential

These networks are more than project support tools. They are living laboratories for low-carbon transition, sources of inspiration and information. Through conferences, working groups, open calls, and experimental projects, they promote a culture of shared learning and co-design.

The French model shows that technical innovation must be embedded in ecosystems that value pedagogy, transparency, and long-term dialogue. Its structure — combining territorial anchoring with national coordination — makes it especially adaptable to other contexts.

Some of these platforms, such as IFPEB and Construction21, are already engaged in European alliances and international collaborations, offering a pathway for replication and mutual learning.

National Platforms and Digital Resources

Construction21 France - A digital platform, professional network, and media hub showcasing exemplary buildings and sustainable urban projects. They organize many events and conferences to inform the professionals. It organises events and conferences and manages both the French and international editions of the Green Solutions Awards.

Plan Bâtiment Durable - A public initiative that fosters dialogue across the construction value chain and helps coordinate national strategies on energy renovation, carbon reduction, and workforce upskilling.

Alliance HQE-GBC - This is a recognized association of public utility for a sustainable built environment set up in 1996. It conducts research programmes to develop reference frameworks related to sustainable buildings, urban plans and infrastructures, definition frameworks on topics such as carbon, circular economy, climate change adaptation, water, sustainable finance digital tools and more in a multicriteria vision combining life quality, respect of the environment, economical performances and responsible management. It also contributes to the sharing of best practices. It owns the HQE® trademark, which is used by certification bodies authorized to issue the HQE certification. It is the French member of the World Green Building Council.

OID – Observatoire de l'Immobilier Durable - The Green Building Observatory – OID, Observatoire de l'Immobilier Durable – acts as a platform for exchanges between actors of the real estate industry on environmental, social and responsible governance issues. OID produces data-driven studies each year, including its flagship publication: the Barometer of Energy Performance (BPE), which has tracked and benchmarked the energy and environmental performance of buildings across France for over a decade. OID also develops practical tools such as R4RE (Resilience for Real Estate), an open-access platform for climate risk & biodiversity analysis and assessment, operating at the European scale, which also offers tailored solutions for adaptation and biodiversity.

IFPEB – Institut Français pour la Performance du Bâtiment - A multi-stakeholder institute that drives collective innovation in building performance, low-carbon construction, and energy efficiency. IFPEB pilots operational programs, coalitions and R&D initiatives to accelerate the sector's environmental transition.

Trade Fairs for Sustainable Construction

► France offers a dense calendar of events dedicated to building decarbonization, energy efficiency, circular economy, and digital transition. These fairs reflect the sector's maturity and vitality and provide an exportable model for other countries.

France hosts a wide range of professional events bringing together stakeholders from the construction, energy innovation, and low-carbon performance sectors. These fairs serve as key platforms to share best practices and promote impactful solutions.

National and Specialized Fairs

Some exhibitions are dedicated to performant and low-carbon buildings (Sibca, ENERJMeeting and Passibat). The others are more general but have sections dedicated to low-carbon buildings.

Trade Fairs Dedicated to Real Estate

- **SIBCA – Low-Carbon Real Estate Fair**

September – Paris (Grand Palais)

Reserved for real estate professionals, SIBCA highlights low-carbon solutions for the design, construction, renovation, and operation of buildings.

- **SIMI – Commercial Real Estate Exhibition**

December – Paris (Palais des Congrès)

Brings together developers, investors, and local governments. Increasing attention is given to ESG performance and sustainable real estate strategies.

- **MIPIM – International Market for Real Estate Professionals**

March – Cannes

A global benchmark event. The "Road to Zero" space is dedicated to resilient and low-carbon solutions for real estate and urban development.

Salon Batimat - 2024

SIBCA - Grand Palais, Paris

France offers a well-established ecosystem of professional events dedicated to sustainable construction, building decarbonization, and environmental innovation. These fairs, congresses, and forums span the entire value chain—from digital technologies to natural materials, from buildings to cities, from design to operation.
While they reflect the diversity of regional dynamics and sectoral expertise, they all share a common ambition: to serve as meeting points, learning hubs, and showcases for concrete, replicable solutions. This list is not exhaustive, but it illustrates the vibrant landscape of the French sustainable building scene—fertile ground for European dialogue and international cooperation.

Trade Fairs Dedicated to Materials, Energy, Efficiency, Digital

- **ENERJ Meeting**

February – Paris (Carrousel du Louvre) / September - Lyon or Nantes - Every year
A high-level conference event on building decarbonization, energy sobriety, RE2020, circular economy, AI, and workforce upskilling.

- **Mondial du Bâtiment (Batimat, Interclima, Idéobain)**

Biennial – October – Paris (Porte de Versailles)
France's largest construction trade show, bringing together manufacturers, contractors, specifiers, and decision-makers around innovation, regulation, and sustainable building solutions.

- **BIM World / Digital Twins / Low Carbon World**

April – Paris Expo Porte de Versailles
The leading European event for digital transition in construction and cities, focusing on BIM, digital twins, and low-carbon solutions.

- **Passibat' – Bioclimatic & Passive Building Fair**

March – Pavillon Baltard, Nogent-sur-Marne (near Paris)
Event for bioclimatic and passive housing, focusing on frugality and energy performance. It offers conferences, exhibitions, workshops, and masterclasses.

- **BePositive**

March – Lyon (Eurexpo)
A key regional event focusing on energy transition, renewable energies, energy efficiency, and low-carbon building solutions for territories and professionals.

- **National Sustainable Building Congress (CNBD)**

September 2025 – Lille
Organized by the French Sustainable Building Network, this biennial event includes conferences, workshops, and feedback sessions around climate adaptation and resilient practices.

- **EnerGaïa – European Renewable Energy Forum**

December – Montpellier (Exhibition Center)
A leading forum focused on renewable energy solutions, smart grids, and local strategies. Widely attended by local governments and energy renovation actors.

Trade Fairs Dedicated to Wood Construction

- **International Wood Construction Forum (FBC)**

April – Paris (Grand Palais)
Brings together architects, engineers, and stakeholders in the wood, biosourced, and geosourced materials sectors. Features pioneering projects aligned with climate strategies.

- **Woodrise – Medium- & High-Rise Timber Congress**

Biannual – alternate Canada / Bordeaux/ Japon
This event focuses on mid-and high-rise timber construction, bringing together architects, engineers, industry, and researchers. Sessions cover decarbonisation with wood, construction innovation, green finance, safety, and circularity.

- **Carrefour International du Bois**

June (even years) – Nantes (Parc de la Beaujoire)
A trade show dedicated to the wood sector, featuring all aspects of timber use in construction and design. Organized by regional wood industry stakeholders.

Trade Fairs Dedicated to Environment and Pollutions

- **Pollutec**

Every year in October – Lyon (Eurexpo) & December – Paris (Porte de Versailles)
Exhibition for environmental and clean technologies, covering 14 thematic areas including sustainable cities and buildings, recycling, energy, water, and biodiversity.

Trainings: Which Schools to Target?

► The transition to low-carbon and resilient buildings is significantly hindered by the lack of skilled labor and qualified design and management. Wide-spread, comprehensive professional training is needed along the supply chain.

École des Ponts Paris Tech

The shift to low-carbon and resilient buildings is constrained by a shortage of skilled professionals across the construction value chain. France has developed targeted training programs, MOOCs, and specialized master's degrees to equip workers, designers, and managers with the expertise needed to accelerate the sector's ecological transition.

The FEEBAT program (formation à l'efficacité énergétique dans le batiment) was launched in 2007 to address the skill gap in energy saving in buildings renovation. This training program supports the skills development of active professionals in the building sector (craftsman, skilled worker; business owner, architect or project manager), as well as teachers and trainers who educate future professionals. This program is half financed under the energy saving certificates scheme. Since its launch, the program has trained more than 190,000 professionals in activity.

MOOCs dedicated to green or low carbon buildings, are mostly hosted on the MOOC Bâtiment Durable platform, launched by ADEME in 2016, together with the Plan Bâtiment Durable.

Executive education programs, such as the Mastère Spécialisé degrees, are open to candidates holding a five-year higher education diploma (equivalent to a Master's degree or RNCP level 7) or a Master's 1 plus three years of professional experience.

These programs aim to provide specialized expertise, dual competencies, and deeper knowledge for career advancement. Designed to meet companies' needs for rare skill profiles, they involve industry professionals in teaching and require at least a four-month work placement, ensuring highly professional training.

Main Mastère Spécialisé (specialized master degree programs) for Green and Low Carbon Buildings and Construction (list by launch year)

- Expert en Construction et habitat durables : École Nationale Supérieure d'Arts et Métiers – ENSAM en co-labellisation avec l'ESTP (2008) 8001-1000th WUR 2025
- Immobilier et bâtiments durables, Transitions énergétique et numérique (IDB) : École des ponts ParisTech (2011, RICS since 2016) 501-600th WUR2025
- Green building bâtiments verts (GBBV): École de l'aménagement durable des territoires ENTPE (2011) – 601-800th WUR2025
- Expert en efficacité énergétique dans la rénovation des bâtiments : École nationale supérieure des mines de Saint-Etienne en co-labellisation avec Centrale Lyon ENISE (2012) 601-800th WUR2025
- Responsable bas carbone de projets de construction (MS RBC) : ESTP - Grande école d'ingénieurs de la construction, en co-labellisation avec ESB (Ecole supérieur du Bois) (2022)
- TEC XX : transformation écologique des constructions du XXe siècle : École nationale supérieure d'architecture de Versailles (2022)
- Génie Civil et Éco Conception, conception et maintenance des infrastructures et bâtiments : École des ponts ParisTech (2023)
- Aménager et construire pour la transition écologique (ACTE) : Centrale Supélec (2023)
- Adaptation des bâtiments au changement climatique - processus BIM et Facility Management : École supérieure d'ingénieurs des travaux de la construction de Caen (2024)
- Bâtiment à énergie positive : IMT Nord Europe École en co-labellisation avec l'IMT Mines Albi (2025) 1001-1200th WUR2025
- Maîtrise d'Oeuvre en Travaux de Génie Ecologique (MS TGE) : ESTP - Grande école d'ingénieurs de la construction, en co-labellisation avec Agro ParisTech

7.

Case Studies & Projects

Olympic & Paralympic Infrastructures

► With 70 new structures delivered on time and within budget, the Olympic infrastructures of Paris2024 show that it is possible — today and at market cost — to halve the carbon footprint of urban development and embrace the climate goals of 2050.

The Paris 2024 Olympic and Paralympic Games are not just a sporting event — they mark a turning point for urban development and sustainable construction in France, delivering a real-scale demonstration of what climate-resilient and circular cities can look like.

View of the "athletes' village" in November 2023 @Drone Press/Solideo

A Model of Governance and Delivery

Under the leadership of SOLIDEO, the public delivery authority for Olympic infrastructures, France has completed an unprecedented program: 70 long-term development projects and public spaces delivered ahead of the Games for a total investment of €4,5 billion. While most sports venues reused existing facilities (95%), new constructions — including the flagship Athletes' Village (330,000 m², €2 billion) — were designed future proof and to serve as permanent assets for the city, co-financed by public and private developers.
Succeeding to SOLIDEO "Grand Paris Amenagement" is operating the heritage phase until 2028. The Olympic sites now stand as a global showcase for French construction, innovation and planning excellence.

Four Challenges, Four Responses

The Paris 2024 infrastructures were designed to address four major urban sustainability challenges: carbon neutrality, climate adaptation, biodiversity, and resource efficiency. among them:

- Up to 47% lower carbon footprint (life-cycle assessment) than standard benchmarks
- Use of low-carbon concrete (-75%), bio- and geo-sourced materials, post-and-beam construction, and renewable energy systems (geothermal heating/cooling covering 70% of needs, PV panels)
- Passive cooling strategies supported by a district cooling network
- Limit the heat island effect in the urban spaces, based on neighborhood-scale thermal modeling
- Biodiversity : 46% of mid-rise buildings (<28 m) with green roofs or facades
- Selective deconstruction and material reuse: 860 tons reused, 96% of materials recovered
- The "Cycle building" showcases water savings of up to 60% and full material traceability
- Construction waste was 87% recovered or recycled, with imported reused components (flooring, exterior fittings) integrated

Several of the Paris 2024 Olympic sites have achieved environmental certifications.

From Demonstrator to Replicable Model

Paris 2024 proves that large-scale urban projects can accelerate the structural transformation of the construction industry. The Olympic infrastructures provide a concrete, tested, and scalable vision of how to build carbon-neutral, adaptive, and inclusive cities.
The message is clear: the French construction sector is ready — technically and economically — to meet the challenges of climate change. And it is willing to share its know-how with other countries and urban projects around the world.

CUBE: French Energy Saving Championship

► **CUBE demonstrates that significant energy reductions are achievable at scale through simple, reproducible actions and collective mobilisation.**

Led by A4MT, the CUBE competition empowers buildings to achieve measurable energy savings in buildings by combining operational adjustments, user engagement, and transparent monitoring across multiple dedicated tracks.

Created in 2013 by A4MT, CUBE is an annual competition in which participants commit to reducing their energy consumption over twelve months compared to a reference year. The programme has progressively expanded to cover diverse building types with tailored formats:

- CUBE.S, for secondary schools and colleges
- CUBE Écoles, for primary schools
- CUBE Tertiaire, for offices and public facilities
- CUBE Datacenter, dedicated to IT infrastructure
- CUBE État, designed specifically for government buildings and public administration facilities
- CUBE Logement, targeting residential buildings and social housing

Each edition offers a structured methodology, dedicated support, and a framework for benchmarking results.

Logic and Objectives

The competition focuses on a "sufficiency-first" approach, encouraging operational measures such as fine-tuning heating, lighting, and ventilation, combined with active engagement of occupants. Performance is monitored monthly through a digital platform. Savings typically range from 12% to 25% in the first year, with some schools achieving reductions up to 40%.

Impact and Mobilisation

Since launch, CUBE has engaged more than 1,500 buildings, demonstrating its scalability and relevance across sectors. Annual awards recognise the best-performing sites and help spread proven practices. CUBE's results are firmly grounded in reality: energy performance is measured directly through meter readings rather than assessed by a jury, ensuring full transparency, comparability, and credibility. This approach eliminates the possibility of embellishing outcomes, guaranteeing that savings reflect genuine operational improvements. The methodology has been endorsed by public authorities as a credible contribution to national energy objectives, including compliance with the Tertiary Decree.

Implementation and Support

Participants benefit from ready-to-use communication materials, coaching, and tools to monitor consumption and engage users. The competition is designed to be easily replicated across entire portfolios, supporting long-term behavioural change and operational excellence.

Key Figures

- 10 dedicated tracks addressing different uses
- Over 1,500 buildings involved
- Typical savings of 12-25% in year one
- Up to 40% reductions achieved in educational facilities

Green Solutions Awards

► Organised by Construction21, the Green Solutions Awards is an international competition that promotes existing solutions for sustainable buildings, districts, and infrastructures. Whether it's new construction or renovation.

Presentation of the Green Solutions Awards 2024-2025 by ©Construction21.

Organised every two years by Construction21, in partnership with the French Ministry for the Ecological Transition, ADEME, and the Global Alliance for Buildings and Construction (GlobalABC), the competition highlights projects that combine environmental performance, affordability, and replicability.
In 2025, the competition gathered 194 projects from 26 countries, offering a global snapshot of innovation in the built environment. Each entry responds to specific local needs, whether climatic, social, or urban, while contributing to international objectives such as carbon neutrality, resilience, and circular economy.

A Dual-Level Competition

The Green Solutions Awards operates through a two-tier system: national juries first select winners in each country. Then an international jury identifies the most exemplary, transferable projects globally.
Award ceremonies are held at major international events, including UN Climate Conferences (COPs), ensuring strong visibility for winning projects and their stakeholders.

A Tool for Benchmarking and Inspiration

Beyond recognition, the Green Solutions Awards provide a structured and accessible database of case studies. They reflect the major trends shaping sustainable construction across the globe, including:

- Bioclimatic design and passive cooling in hot climates
- Low-carbon retrofitting in dense urban areas
- Bio- and geo-sourced materials
- Integration of biodiversity and nature-based solutions
- Climate-resilient educational and social buildings
- Local resource use and community-led approaches

The competition is open to all types of stakeholders (public, private, NGOs, developers, architects, engineers, etc.) and is free of charge. Projects are published on the Construction21 platforms and translated to ensure broad international dissemination.

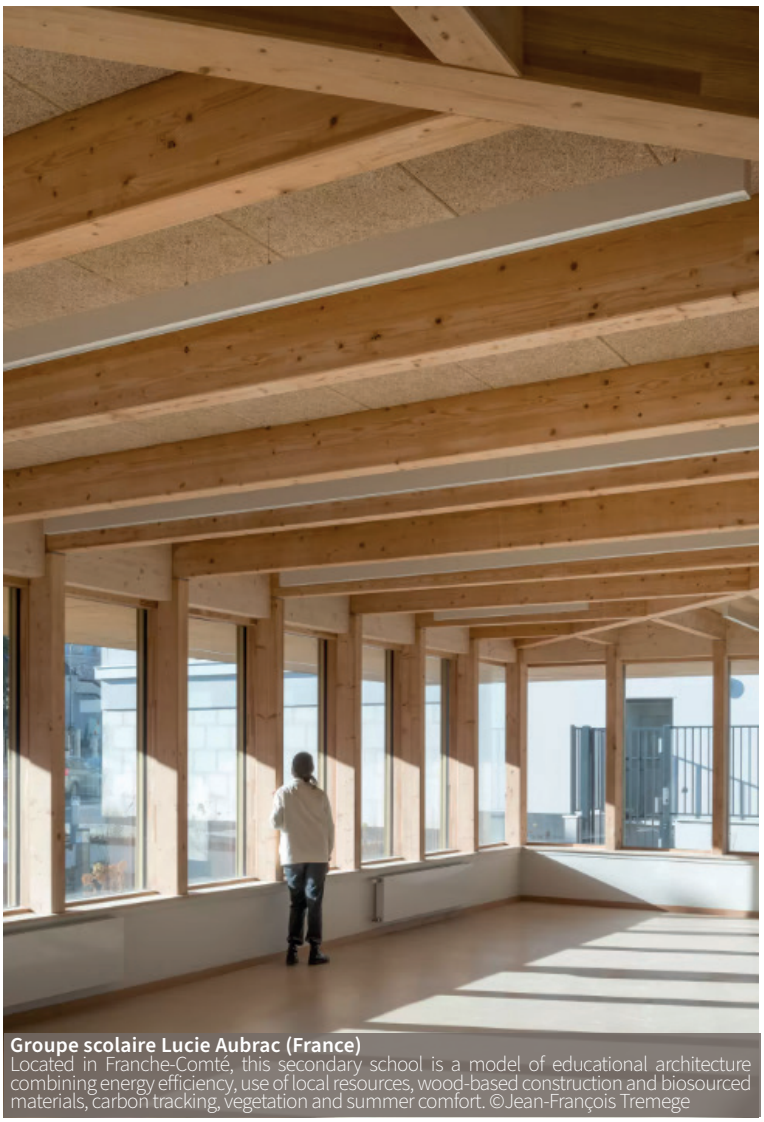
A Replicable Model

By showcasing affordable and scalable practices, the Green Solutions Awards aim to accelerate the ecological transition in the building sector globally. The competition serves as a source of technical inspiration for professionals; a benchmarking tool for public authorities and decision-makers and a communication platform for tested and transferable innovation
Through its international reach and strong focus on realised projects, the Green Solutions Awards contribute to the collective intelligence needed to transform the built environment worldwide.

Inspiring Examples

Bioclimatic Villa by Habidem. Nouakchott, Mauritania ©Habidem

Serre de la Saline royale d'Arc-et-Senans (France)
A stone-metal-glass greenhouse using entirely recyclable, locally sourced, and low-carbon materials, including low-carbon glass and geothermal energy via a Canadian well. A minimalist and reversible design that honours heritage while reducing impact. ©Valentin Reigneau



Groupe scolaire Lucie Aubrac (France)
Located in Franche-Comté, this secondary school is a model of educational architecture combining energy efficiency, use of local resources, wood-based construction and biosourced materials, carbon tracking, vegetation and summer comfort. ©Jean-François Tremege

Charmille Schuman Eco-District (Belgium)
transforms a 2.1-ha site into a sustainable urban campus combining schools, sports facilities, and public spaces. Designed as a compact and energy-efficient ensemble, all buildings are certified passive.

Edificio ZERO, Zaragoza (Spain)
An energy-positive housing block integrating passive design, natural ventilation, and neighbourhood-scale energy strategies.

Paris Bioclimatic Urban Plan

► The City of Paris has adopted an ambitious "bioclimatic" PLU that redefines how the capital will evolve over the next 15 years. From social housing targets to low-carbon construction and climate adaptation, the plan offers a replicable framework for dense urban centres facing climate and social pressures.

With its new Local Urban Plan (PLU), Paris positions itself as a model for climate-responsive urban policy, combining social equity, ecological ambition, and architectural transformation.

@Ville de Paris

Social and Climate Ambitions at the Core

Adopted in November 2024, Paris' new Local Urban Plan aims to address climate challenges while preserving the city's historic fabric. By 2035, 40% of housing in Paris is to be public, including 30% social housing and 10% affordable housing. Office buildings over 5,000 m² must convert 10% of their surface into homes. In areas with a deficit in social housing, new developments must allocate 50% of surface area to this need.

Green Space, Water Management, and Urban Cooling

The plan protects existing green spaces and 265 landmark trees, while targeting the creation or extension of 300 hectares of new green areas. A green corridor will link the 18th and 19th arrondissements. Paris also aims to de-seal 40% of its public space by 2050 to improve rainwater management and reduce urban heat.

Toward Low-Carbon and Passive Construction

The PLU prioritizes renovation over demolition, with a strong emphasis on energy performance and low-carbon design. Key provisions include:

- Higher energy and carbon standards than national regulations (RE2020)
- Mandatory use of biobased or geosourced materials; 100% concrete buildings are banned
- Bioclimatic design requirements: solar protection, natural ventilation, and thermal inertia
- Cooling only allowed if passive solutions or cold network connection are unfeasible

Innovative Urban Tools for Resilience

New buildings must comply with a vegetated building index that accounts for green roofs, walls, and courtyards. Projects with heavy restructuring or new builds must meet at least three out of nine sustainability criteria across biodiversity, land-use programming, and energy efficiency. This rewards projects that go beyond compliance — such as incorporating rainwater reuse systems or achieving exemplary carbon performance.

Preservation and Flexibility in Existing Buildings

To support energy renovation, the city allows for greater flexibility in modifying façades and rooftops. While heritage protection is maintained, energ performance is now a priority protection remains, energy performance becomes a priority. Sun-shading systems must be retained, restored, or added depending on exposure. Roof extensions (up to 3 metres or 3 floors on modern buildings) are encouraged, provided that courtyard areas are de-sealed and greened.

Paris' bioclimatic PLU marks a major step toward sustainable urban development. It balances social priorities, ecological resilience, and architectural innovation — offering a replicable model for global cities navigating the climate transition. The first construction permits under the new rules are expected by the end of 2025, with architectural competitions to follow.

EduRénov': School Renovation

► Supporting and financing 10,000 renovation projects for future proof educational buildings from daycare, school, to university.


@Banque des Territoires

The massive energy renovation of educational buildings in France is crucial to achieving the national ecological transition objectives, including carbon neutrality by 2050 and adaptation to climate change.

France's 60,000 educational establishments, representing 130 million m² (half of the public buildings owned by local authorities), host 11 million students and professionals every day. Schools alone account for nearly 30% of overall energy consumption. Many of these buildings are old, energy-intensive, and poorly adapted to climate change, leading to discomfort for both students and teachers.

The EduRénov program by Banque des Territoires (branch of the national development bank Caisse des Dépôts), launched in early 2023, aims to improve comfort, indoor air quality, summer heat resilience, and adaptation to climate change, while reducing operational costs and meeting ecological requirements. The initiative offers a basic package (guidance, resources, digital tools) along with additional services (engineering, up to 80% co-financing, long-term loans).

Facts and Figures

- Goal: -40% reduction in energy consumption of tertiary buildings, including educational buildings, by 2030
- Ambition: 10,000 projects by 2027 (5,000 projects already supported as of May, 2025)
- Resources: A budget envelope of €2 billion (loans and repayable advances) and €50 million for engineering over 5 years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International Leadership

Europe Sets the Pace, France Leads the Way

► **Implementation, adaptation, and extension of the EU regulatory framework.**

Whether in energy performance, sustainable finance, or carbon trading, France is obligated to comply with EU law, but often goes beyond it by setting more ambitious standards. The adaptation of French law relies both on transposing EU directives and anticipating their effects in key sectors such as buildings.


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The Primacy of EU Law: A Shared Framework for Action

As a member of the European Union, France must comply with the principle of primacy of EU law: in the case of a conflict, EU regulations, directives, or decisions take precedence over national legislation.

- Regulations apply directly and uniformly across all Member States
- Directives, however, must be transposed into national law through French statutes or regulations within a specified timeframe
-

EPBD: A Mandate for Large-Scale Renovation of the Building Stock

The Energy Performance of Buildings Directive (EPBD), revised in 2024, must be transposed by May 2026[1]. It requires Member States to:

- Establish national renovation plans
- Move toward zero-emission buildings
- End subsidies for fossil fuel boilers by 2025
- Ensure that new buildings are solar-ready

In France, policies such as the RE2020 environmental regulation and the National Low-Carbon Strategy (SNBC) already anticipate or exceed several of the EPBD's requirements.

Taxonomy, CSRD, ETS2: Structuring the Sustainable Economy

- EU Taxonomy: A classification system that provides reference framework for companies and financial actors to demonstrate their environmental alignment and help prevent greenwashing[2]
- CSRD (Corporate Sustainability Reporting Directive): It requires large companies to disclose information in line with harmonized European standards on their environmental, social, and governance (ESG) impacts. It reinforces existing transparency obligations and supports the implementation of the taxonomy[3]
- ETS2 (Emissions Trading System 2): A new EU carbon trading scheme, distinct from the original ETS, that will cover emissions from buildings, road transport, and selected industrial sectors starting in 2027.[4]

[1] https://energy.ec.europa.eu
[2] https://finance.ec.europa
[3] https://www.amf-france.org
[4] https://climate.ec.europa.eu

Wake the Sleeping Giant?

► Join the Multilateral Climate collaboration in the building sector framed by the Chaillot declaration and supported by the GlobalABC, and the ICBC.

Accounting for 20% of global GHG emissions, and increasingly vulnerable to climate change the building sector has long been overlooked in climate policies and international fora. But that is changing.

Recognizing the critical role in climate action of the building sector, international collaboration has gained structure and momentum since COP21, under the leadership of France and with the strong support of UNEP, around four main pillars:

- A Global Sectoral Platform, **the Global Alliance for Buildings and Construction (GlobalABC)**. Launched at COP21 in 2015, GlobalABC brings together governments, industry stakeholders, and the entire buildings value chain with a shared vision: to achieve a zeroemission, energy-efficient, and climate-resilient building sector by 2050. Its Secretariat is hosted by UNEP in Paris, and it serves as the leading international platform for climate action in buildings.

- A shared political vision: **the Chaillot Declaration**. This shared ambition on objectives and policy for transitioning toward decarbonized and resilient buildings is supported by governments gathered on March 8, 2024, at the ministerial meeting held during the first Buildings and Climate Global Forum (March 2024, Paris).

- To implement the Chaillot Declaration, a ministerial council for building decarbonization and resilience, or **Intergovernmental Council for Buildings and Climate (ICBC),** was established at COP29 (Article 7.2, Chaillot Declaration). Brazil, France and Kenya are the three co-chairs of the ICBC for the 2024-2027 period. ICBC ministerial meetings are planned to take place each year at COPs.

- Since COP28, the GlobalABC has adopted a **2030 Action Agenda, known as the Buildings Breakthrough**. This program aims to define priority international actions for new buildings and major renovations that are near zero-emission and resilient to climate change.

The GlobalABC also cooperates with complementary programs such as the Partnership for Energy Efficiency in Buildings (PEEB), co-managed since 2018 by AFD and German cooperation (GIZ), as well as the international action plan “Greening construction with sustainable wood” aimed at developing wood and bio-based materials in construction, within the Forest and Climate Leaders’ Partnership (FCLP). These organisations collaborate closely with UNESCO, ICOMOS, IEA, CEM, EEHub and OECD secretariats also based in Paris.

Figures

- GlobalABC: 382 members, 7 Hubs (Adaptation, Clean Heat, Data, Market Transformation, Finance, Materials, Sufficiency), 3 Action Groups (Higher Education Institutions, Passive Cooling, Subnationals Action Group) 7 Buildings Breakthrough priority actions (Standards, Demand Creation, Finance and Investment)
- ICBC: 47 countries members, 17 observer countries

Annex

1990-2025 Timeline of Major Building-Climate Laws

1990
- Launch of the HQE® concept (High Environmental Quality)

► Beginning of a voluntary approach to sustainable construction.

2000
- SRU Law (Solidarity and Urban Renewal)

► Introduces environmental considerations into urban planning and land use.

2005
- Thermal Regulation RT2005

► Strengthens energy efficiency standards for new buildings.

2009
- Grenelle Environment Forum

► Launch of a national dialogue on sustainable development and construction.

- First National Sustainable Development Strategy (NSDS)

2012
- Thermal Regulation RT2012

► Makes Low-Energy Buildings (BBC) the new standard for construction.

2015
- Energy Transition for Green Growth Act (LTECV)

► Sets goals for carbon neutrality and large-scale building renovation

- 1st National Low-Carbon Strategy (SNBC1)

► First national roadmap for climate mitigation.

- 2nd National Adaptation Plan to Climate Change (PNACC)

2016
- Launch of the E+C- Experiment (Energy Positive & Carbon Reduction)

► Prepares for the RE2020 regulation by testing energy and carbon thresholds.

- First Multi-year Energy Programming (PPE1)

► Strategic guide for national energy policy.

2018
- National Building Renovation Plan (PREB)

► Focused on increasing the number and quality of energy-efficient renovations.

- Update of the National Low-Carbon Strategy (SNBC2)

► Reinforces 2050 decarbonization targets.

- ELAN Law & Tertiary Decree (Éco Énergie Tertiaire scheme)

► Mandatory energy consumption reduction for tertiary buildings over 1,000 m^2.

2021
- Climate and Resilience Law

► Gradual ban on renting highly inefficient buildings (energy sieves), improved energy performance diagnostics, and the “zero net land artificialization” goal.

- Entry into force of RE2020 (Environmental Regulation 2020)

► A new regulation integrating energy performance, carbon footprint (via Life Cycle Assessment), and summer comfort.

2023
- Launch of the CAP 2030 Project

► A voluntary framework beyond RE2020 covering circularity, biodiversity, low-tech, and more.

2025
- 3rd National Adaptation Plan to Climate Change (PNACC3)

- First release of CAP 2030’s Common Reference Framework (expected in 2025)

► A practical, evolving tool to support pilot projects and industry-wide learning.

- Third National Low-Carbon Strategy (SNBC3) (expected in 2025)

► Expected to include imported emissions and stricter targets for buildings and renovation.

- Updated Multi-year Energy Programming (PPE2) (expected in 2025)

► Aligned with EU goals (Fit for 55, Green Deal).

Thanks

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ABOUT ADEME

At the heart of the missions entrusted to it by the Ministry for the Ecological Transition, the Ministry in charge of Energy, and the Ministry in charge of Research, ADEME – the French Agency for Ecological Transition – shares its expertise, provides funding, and supports the implementation of transformative projects across several fields: energy, circular economy, industrial decarbonisation, mobility, buildings, air, sustainable production, consumption and food, bioeconomy, adaptation, soil management and just transition.

It engages citizens, economic actors, and local authorities, by providing them with the tools to move towards a low-carbon and resource-efficient society. Firmly committed to tackling climate change and resource depletion, ADEME advises, facilitates, and helps finance numerous projects, from research to the dissemination of practical solutions. It leverages its expertise and foresight capacities to support the development and implementation of public policies.

ADEME is a public industrial and commercial institution (EPIC).

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RÉPUBLIQUE
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Build the Future
The French
Climate Challenge

Buildings account for nearly 30% of national CO2 emissions, with over a third tied to construction and materials. As cities expand and the climate crisis deepens, decarbonising the built environment is no longer optional : it's a global imperative.
Since the Paris Agreement, France has been accelerating in developing an integrated national strategy to transform its building sector from regulations and technical standards to territorial innovation and international cooperation.
Thus, France has developed a comprehensive ecosystem of tools and methods to support this transformation : life-cycle assessment database, building performance monitoring platforms, digital innovation programs, and renowned labels and certifications. These instruments help steer and foster action and measure progress.
This booklet provides a clear, concise and accessible guide, tracing the paths, policy choices, experiments and results. This booklet becomes a tool for dialogue between partners, but also a lever for internal transformation, by fostering critical reflection on the still too numerous blockages: renovation financing, regulatory complexity, territorial inequalities. It offers a strategic overview of the French model, highlighting the key drivers of transformation : legislation, tools, standards, local mobilisation, training, innovation, and global alignment.

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