
DECARBONIZATION
10
ACTION PLANS
FOR 10 SECTORS
CRÉDIT AGRICOLE
PRESENTS
DESTINATION
2050
OUR CLIMATE
TRANSITION PLAN
TERRITORIES
ALL IMPACTED,
ALL INVOLVED
CARBON NEUTRALITY:
A SOCIAL CHOICE
FOR FRANCE
PHILIPPE BRASSAC
"THERE IS CURRENTLY
A LACK OF LOW-CARBON
ENERGY INITIATIVES"
WE DEMAIN
Éditions

As a member of the Net Zero Banking Alliance, Crédit Agricole is committed to aligning the greenhouse gas emissions generated by its financing activities with a pathway to carbon neutrality by 2050.

To achieve this, the bank will prioritize its most impactful sectors. It will also set interim targets for 2030 and report annually on its progress. Additionally, through the Net Zero Asset Managers Initiative, Amundi, Crédit Agricole Group's asset management subsidiary, will work with all its investors and savers to ensure their portfolios reach net zero carbon emissions by 2050, with significant reductions by 2030. As part of the Net Zero Asset Owner Alliance, Crédit Agricole Assurances has also committed to achieving carbon neutrality for its investment portfolios by 2050. As a founding member of the Forum for Insurance Transition to Net Zero, led and convened by the United Nations, Crédit Agricole Assurances supports the necessary acceleration and scaling up of voluntary climate action by the insurance industry and key stakeholders.

SUMMARY


WHERE IS THE CLIMATE HEADING? INSIGHTS FROM THE POLAR REGIONS


INTERVIEW WITH PHILIPPE BRASSAC


CHRISTINE LECONTE BY WE DEMAIN

ANADOLU AGENCY / AFP - JOËL SAGET / AFP - PORTRAIT MADE WITH A.I. PHOTO : AMÉLIE MARZOUK

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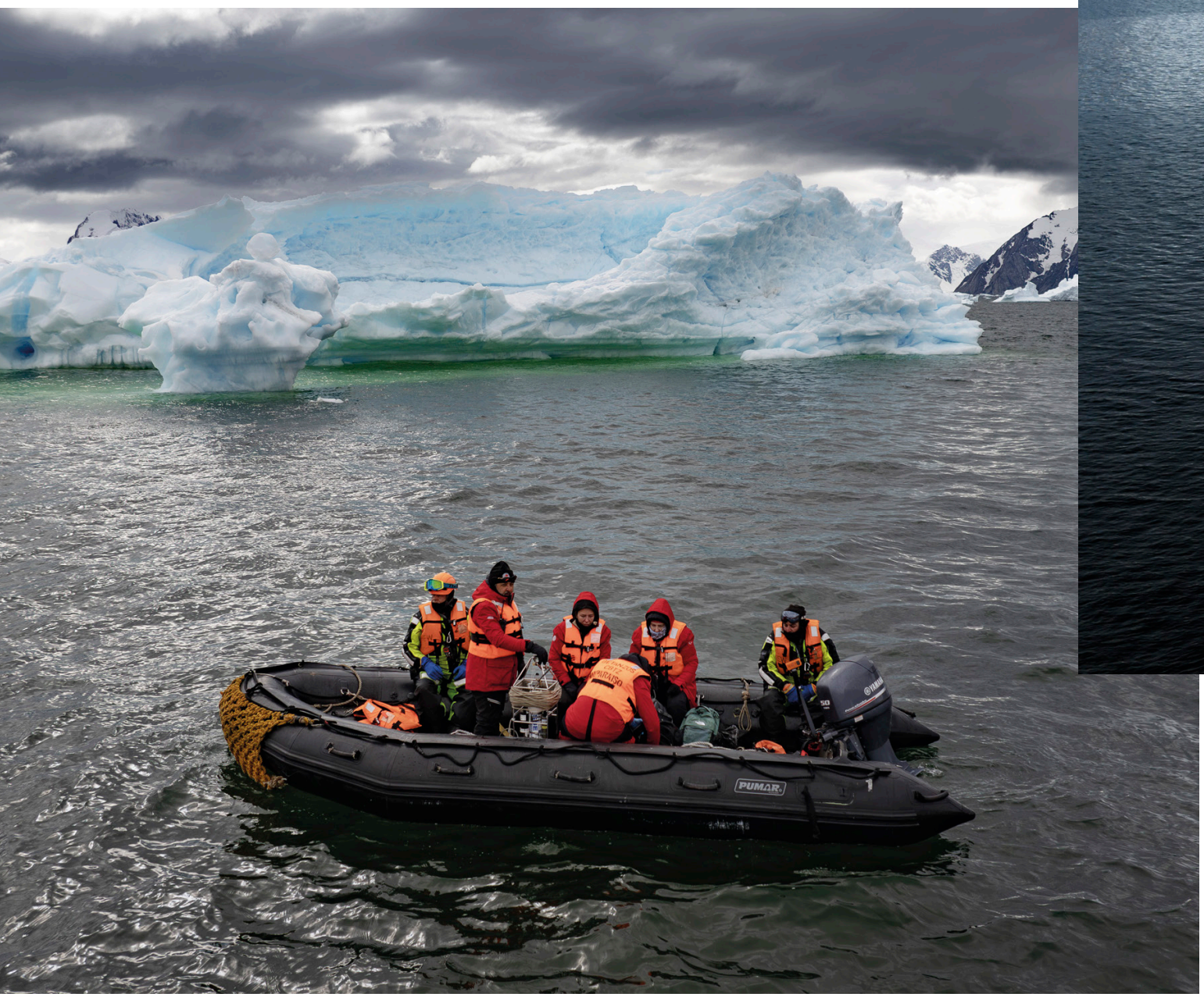
FOUR SCENARIOS FOR AN OVERHEATING PLANET

PHOTOS: SEBNEM COSKUN/ ANADOLU AGENCY/AFP

TEXT: VINCENT RONDREUX/WE DEMAIN

In early 2024, researchers set out on the eighth Turkish scientific expedition to study glacier dynamics in Antarctica. However, the scientists, could only observe the historic melting of the ice pack, which has remained intact until recently.

Turkish scientists collecting samples for their research on marine ecosystems. February 12, 2024.



An iceberg seen during a dive near Horseshoe Island. February 15, 2024.

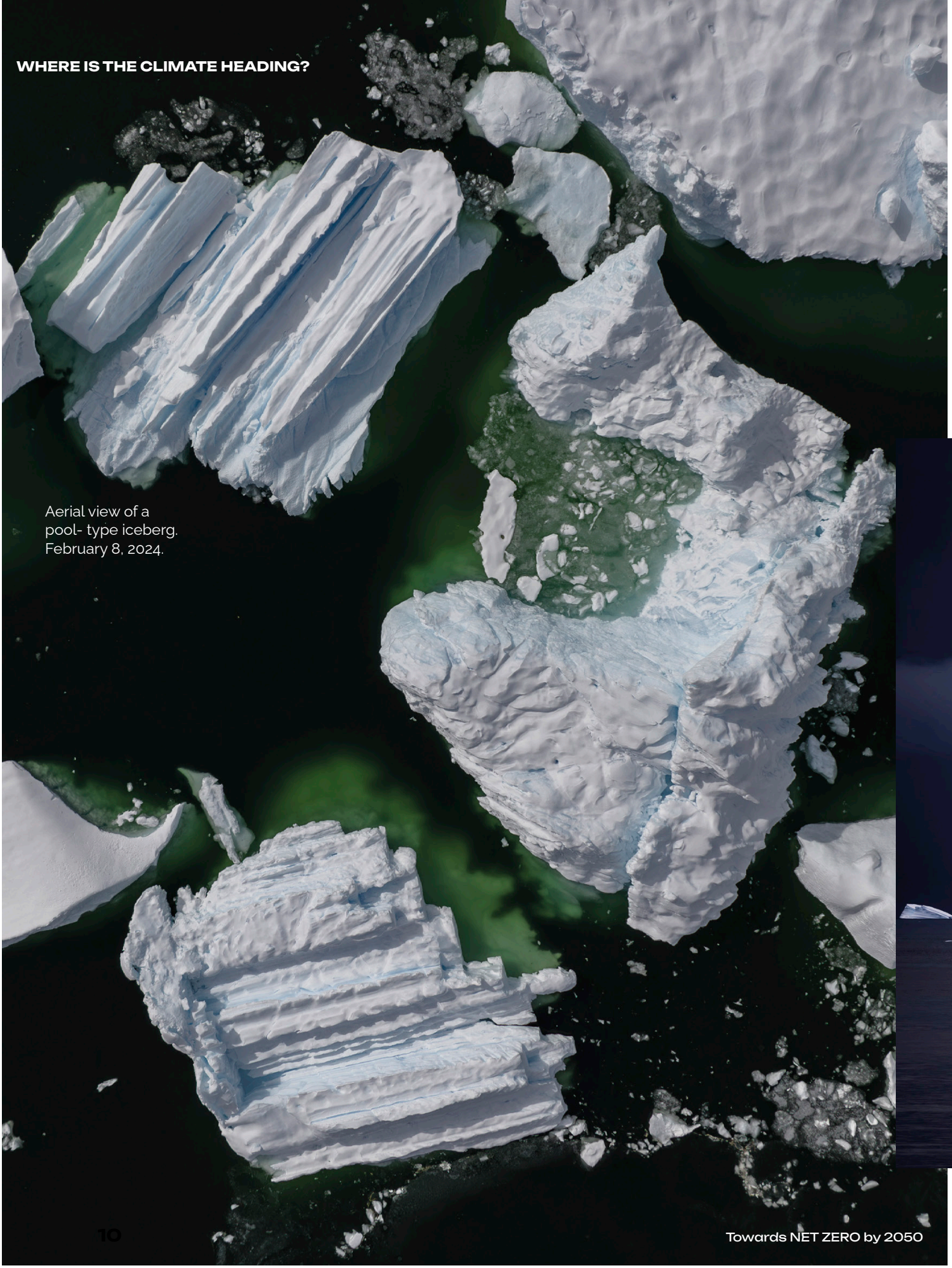
+ 1.5°C

— **Disappearance of coral reefs**
— **Twice as many days of extreme heat in France**
— **More and more mega-fires and mega-storms**
— **Reduced crop yields**
— **Tens of millions of people displaced**
— **Higher risk of global warming spiraling out ofcontrol (“Tipping Points”)**

Thousands of icebergs observed along the route between 62° and 68° south latitude in the Southern Ocean clearly demonstrate the effects of global climate change. February 4, 2024.

+ 2°C

— No sea ice in the Arctic in some summers
— Increase in “composite” extreme events such as drought + heatwaves + fires
— Sharp rise in CO_2 and methane emissions due to melting permafrost and disappearing forests
— Sea fishing catches plummet
— Food supply under threat
— Development of vector-borne diseases and zoonoses
— In France, the Garonne River dries up for months each year
— Rise in conflicts over water



Aerial view of a pool- type iceberg. February 8, 2024.

+3°C

— **Sweltering summers have become the norm**
— **Increased mortality rates due to the combined effects of heat and humidity**
— **French forests replaced by heathland**
— **Lille has a similar climate to Bilbao and Marseille to Andalusia**
— **Temperatures in Paris reach highs of 50°C**
— **Alpine glaciers have melted**
— **Biodiversity is collapsing**

Sea ice cover at the South Pole continues to shrink. In 2023, it fell to the lowest level measured since satellite records began in 1979.

+4°C

- Increasing damage from flooding
- Rising sea levels are eroding coastlines and rendering coastal cities uninhabitable
- Many regions are no longer suitable for agricultural production
- More and more areas of land are no longer viable places to live
- Billions of people lack access to water
- Famines, migrations, and conflicts are on the rise

The Antarctic ice pack acts as a barrier to protect the continent from the constant onslaught of the waves. Its depletion could set off a chain reaction for the planet. Below, an image of an eroded iceberg, February 18, 2024

DECIPHERING A DYSTOPIAN FUTURE

The latest IPCC reports provide increasingly precise predictions of our future world, with regional variations and for each degree rise in temperature. These systemic projections underline devastating consequences for human societies, that will be felt well before the end of the century.

BY VINCENT RONDREUX/WE DEMAIN

Global warming, now at around +1.2°C compared to preindustrial times, is impacting the entire planet. Climatic zones are shifting towards the poles, and Category 3 to 5 cyclones are becoming more frequent. Heatwaves, periods of heavy rainfall and drought are increasing in both frequency and intensity. Approximately 3.5 billion people are living in vulnerable conditions, and half of the human population experiences water shortages for at least one month each year. Over the past thirty years, the average area covered by Arctic sea ice at the end of summer has shrunk by 40%. Glaciers are melting at a rate that is irreversible on a human timescale, and glacial lakes risk bursting their banks, endangering the communities living downstream. Ocean warming and the melting of polar ice caps, both irreversible processes, are responsible for sea level rise of at least 20 cm. In France, no less than 20% of the coastline is threatened by erosion. Excess CO_2 in the atmosphere and global warming are causing the acidification and deoxygenation of the oceans. With each tenth of a degree rise in temperature, the number of species in danger of extinction increases.

Disintegration of ice sheets

With an increase of 1.5°C, the risks are even greater. For example, temperature extremes on hot days would increase by around 3°C in mid-latitudes and the number of days of extreme heat in France would double. Storms and flooding could force the displacement of tens of millions of people. By 2050, more than a billion people would be at risk from coastal-specific climate hazards. In the oceans, coral reefs would disappear, unable to recover from frequent marine heatwaves. This would also have an impact on food chains, coastal erosion, fishing and tourism, etc. Ocean acidification would affect the development of a large number of species, such as algae, shellfish and fish. The number of oxygen-deprived areas would increase. With a temperature rise of more than 1.5°C, land areas and oceans would absorb less atmospheric CO_2. There would be an increased risk of sudden tipping points occurring, such as the disappearance of the Amazon rainforest, the disintegration of ice caps accelerating global warming, and rising sea levels.

Composite and apocalyptic events

With an increase of 2 °C, some summers in the Arctic Ocean would be ice-free. Permafrost would thaw at an accelerated rate, resulting in higher concentrations of CO_2 and methane in the atmosphere. There would be less water available from melting snow for irrigation. In addition to the loss of coral reefs, other marine and coastal ecosystems in the Arctic and biodiversity hotspots would be at greater risk of disappearing. Marine fishing hauls would decrease by several million tons, threatening small-scale fishing in low-latitude regions.

Across all continents, there would be an increase in torrential rain, droughts, and forest fires. Composite events (drought combined with heatwaves and fires, torrential rain leading to floods, storms, and coastline erosion) would become more frequent and more severe.

Lyme disease, chikungunya, malaria, cholera...

The number of people exposed to climate-related risks would continue to increase. Cereal production yields and quality would fall, leading to malnutrition. Human migrations would rise. From a health standpoint, cases of dengue fever (transmitted by mosquitoes) would surge. Other vector-borne diseases, like chikungunya virus, Lyme disease, malaria, etc., would be more prevalent. Water-related disasters would lead to cholera, the movement of animals and melting permafrost would increase the risk from zoonoses.

In France, ecosystems would be under strain. With more frequent heatwaves and drought, more and more tree species would be affected, including spruce, silver fir, beech and oak trees. Forests would be replaced by grass heaths. The Mediterranean would become increasingly arid. The entire country would be at greater risk from fire. Glaciers in the Pyrenees would melt. Rivers would remain dry for months at a time, like the Garonne in Toulouse, threatening the drinking water supply, irrigation, hydroelectric and nuclear energy production, etc.

Collapse of biodiversity

With an increase of 3 °C, hydroelectricity potential would fall by up to 40% in several regions of Europe. The costs of damage from flooding and heavy rains would double across the continent and the number of people at high risk of death would triple in comparison to the scenario of a 1.5°C increase.

An increase in global warming of close to 3°C would mean a 4°C increase in France. Summers like in 2003 or 2022 would become the norm, with as many as 70 nights of tropical heat per year, the number of heatwave days increasing by five or tenfold, summer drought lasting over a month in the South, virtually no snow in mid-mountain areas, glaciers disappearing in the Alps and triple the amount of days where there is a risk of fire in the Mediterranean. Lyon would have a similar climate to Rome and Marseille to Andalusia. Temperatures in Paris would reach highs of 50°C. Biodiversity would be on the verge of collapse. Ten times as many endemic species would become extinct compared to global warming of 1.5°C. With global warming of 4°C, up to 100% of marine species would potentially be endangered in the countries of the intertropical belt, particularly in Asia. Many areas of land and forests would become CO_2 emitters.

Sea-level rise could exceed 1 meter by 2100. The areas around Le Havre and the highly industrialized Seine estuary, to as far as Rouen, would already be at risk from flooding, as would the area from the Loire estuary all the way to Nantes.

Sharp rise in human migration

Global warming of 4 °C would lead to a catastrophic situation for humankind. The combined effects of heat and humidity would be deadly. These conditions, while posing a risk for several days a year in France, would be constant in various regions worldwide, such as Indonesia, Congo and the Amazon, etc. Annual GDP losses would be higher than those caused by the Covid pandemic. Four billion people would lack access to water. Over 30% of previously agricultural regions would become unsuitable for crop production. Periods of extreme heat that used to occur once every ten years would happen every year. At the same time, daily rates of heavy rainfall would increase by more than 20%. Flood damage would be up to five times greater than at 1.5°C. Human migrations would rise sharply.

France's landscape ravaged

With global warming of 4 or 5°C, sea levels would rise by over 1 meter by 2100, even reaching as high as 2 meters. This could increase to 5 meters by 2150 and around twenty meters over a period of 2,000 years. The faster and more significant the rate of global warming, the more likely that the polar ice caps will disintegrate (like the Thwaites glacier in Antartica, nicknamed the Doomsday Glacier). Rain would cause coastal flooding combined with storms and high waters, ravaging the landscape in France. With a 1-meter rise, Le Havre and the highly industrialized Seine estuary, to as far as Rouen, would be at risk of submersion, along with the Loire estuary as far as Nantes, and from the Gironde to beyond Bordeaux. Abbeville, Caen and Bayonne would also be under threat. The Camargue region, including the area around Fos-sur-Mer and the Marais Poitevin national park would be in danger, as well as the Cotentin marshes, areas of Vendée, Charente-Maritime, Mont-Saint-Michel Bay and Nord-Pas-de-Calais. Many islands would be submerged by the sea, like Chausey, Bréhat, Sein, Noirmoutier, Ré and Oléron, and Quiberon would be transformed into an island, before eventually finishing under water. ■

Sources: IPCC, regional IPCC, WMO, Météo-France, BRGM, Ministry of Ecological Transition

CARBON NEUTRALITY

WHAT SOCIAL CHOICES WILL BE MADE IN FRANCE?

Behind the figures and various reports on carbon reduction, different strategies are emerging and prompting debate: should we focus on reducing energy consumption or developing technology to protect our planet? With more far-reaching implications than energy, our current lifestyles are at stake.

BY VINCENT RONDEUX/WE DEMAIN

PAUL LANGROCK / REA

The term "carbon neutrality" has been around for several decades, and has become ubiquitous in the media and economic reports. But what exactly does it mean? Let's start with some figures: France's current objective for carbon neutrality is to reduce greenhouse gas emissions (in CO_2 equivalent) from around 540 million tons in 1990 to approximately 80 million tons by 2050. The remaining emissions should be absorbed by storing CO_2 in plants and soil, and, to a lesser extent, by developing future technologies for capturing atmospheric CO_2. In 2023, emissions were at 385 million tons. This means we need to reduce emissions by around 5% annually, compared to an average annual reduction of 2% for the period between 2017 and 2022. To put this into perspective, the 5% reduction required is equivalent to the drop in emissions seen during the Covid-19 lockdown in 2020.

Having set this objective, the question now is how to achieve it and make it easier for decision-makers and citizens to take action. This method requires a set of planned objectives and reforms for each major economic sector, as well as intermediate targets that are regularly reviewed.

WHAT IS CARBON NEUTRALITY?

Global warming is mainly caused by CO_2 emissions resulting from human activities. Topping this list are the emissions generated by the burning of fossil fuels, like coal, oil and natural gas. Currently, anthropogenic emissions produce twice the amount of carbon that oceans and terrestrial ecosystems can absorb. What remains is stored in the atmosphere, thus causing global warming. Carbon neutrality is the concept of reducing CO_2 emissions (strictly limiting fossil fuel use and applying the principles of reduced energy consumption) and increasing the amount of carbon sinks: forests, soils, wetlands, technological methods of CO_2 storage, etc. Achieving this objective requires concerted action by all countries. At COP21, governments signed an agreement to limit global warming to well below 2°C, with a target of 1.5°C. Each country must implement a strategy in order to achieve carbon neutrality worldwide, in accordance with its level of development.

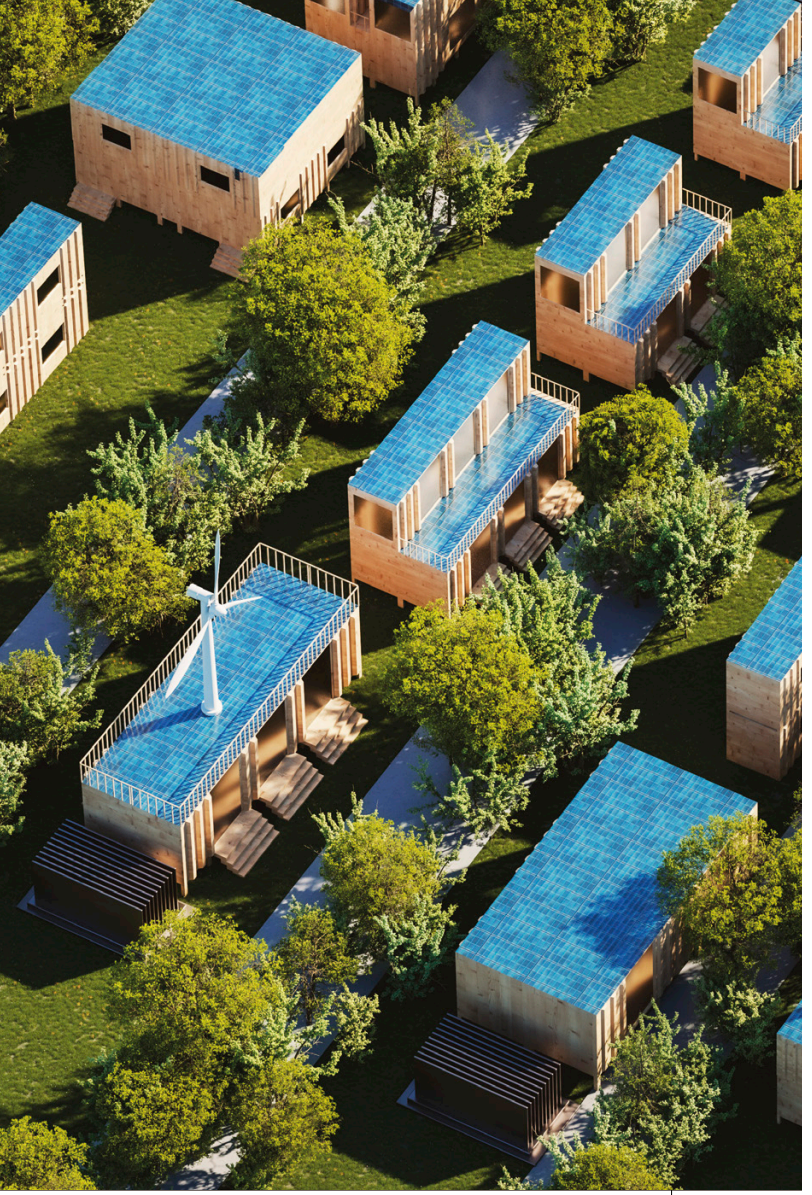
REVISED NATIONAL ENERGY-CLIMATE PLAN

After falling behind schedule with the Paris Agreement, in 2021, the European Union set a target to reduce its emissions by 55% between 1990 and 2030. Consequently, in late 2023, France sent a revised draft of its National Energy-Climate Plan to the European Commission, with quantified target objectives, setting out its new aim for 2029-2033, to reduce gross emissions to 256 $MtCO_2e$ (239 tons including carbon captured by plants and soil), compared to the current target of 299 $MtCO_2e$. This represents a reduction of 129 $MtCO_2$ compared to today's levels (-33.5%). It sets out a twofold approach to reduce and replace. This involves reducing total energy consumption through energy efficiency and more rational energy use, while at the same time, increasing production of low-carbon electricity to replace oil, natural gas and coal as quickly as possible. Low-carbon energy sources include photovoltaic solar energy and wind power. The country also plans to decarbonize heat production, by using biomass, heat pumps, geothermal energy, biogas, solar thermal energy and low-carbon hydrogen, produced either by electrolysis or naturally. In addition, from 2027, technologies for the capture, storage and reuse of CO_2 will be developed for activities where there is "no alternative" to fossil fuel use, such as the cement, chemical and metallurgy sectors, etc.

FRUGAL GENERATION OR 100% TECH?

This decarbonization strategy also sets out a "trajectory" for progress up to 2050. This evolving framework provides a basis for reflecting on the real societal choices that need to be made. The scenarios developed by ADEME (French Agency for Ecological Transition) reflect this approach. On the one hand, it relies on the actions of individuals: reducing energy consumption and meeting people's needs (housing, mobility, food, leisure activities, etc.) via the least impactful means. And on the other hand, this approach is banking on technological innovation to achieve a more socially acceptable transition. These scenarios range from "voluntary but partly imposed frugality" to "rushing headlong into a

ISTOCK



THE QUANTIFIED NATIONAL PLAN FOR 2030

1 - Reduce final energy consumption to 1,209 TWh compared to 1,532 TWh in 2022, i.e. a decrease of 21%.

2 - Achieve an energy mix that includes 58% low-carbon energy in the energy mix, and 96% low-carbon electricity, with 61% from nuclear power and 35% from renewable energies.

3 - Install around 120 GW of renewable energy by 2030 compared to 65 GW at the end of 2022, an increase of 84%.

4 - Double the area of land given over to legume production (2 million hectares, 8% of agricultural land) and organic agriculture (18% of agricultural land).

5 - Make energy-efficient renovations to 400,000 individual homes and 200,000 collective housing units per year over the next decade.

6 - Increase the proportion of new vehicles sold to 66% electric cars, 51% electric light commercial vehicles, and 50% electric heavy goods vehicles.

7 - Decarbonize high-emitting industrial sites via measures for energy efficiency, low-carbon heating and CO_2 capture and storage, in order to go from 4 to 8.5 $MtCO_2$/year by 2030.

8 - Renew forests by 10% over the next ten years.

In order to meet the targets set for 2030, the following measures will also be necessary: reusing harvested wood in durable products, revitalizing the French renewable energy sector, and enforcing the law on separating bio-waste at source for recycling.

Source: France's Comprehensive National Energy-Climate Plan (October 2023), submitted to the European Commission.

technological era". Each scenario outlines a path to carbon neutrality by 2050, without a drop in GDP, but each presents different challenges and risks. The French strategy wavers between two of the more moderate scenarios, called "Regional Cooperation" and "Green Technologies". The "Regional Cooperation" scenario focuses on a shift in lifestyles towards a more equal society where sharing is commonplace. It relies on a gradual evolution of the economic system that combines energy efficiency and more responsible use. Consumption of goods would become more measured, and sharing would become the norm. Changes in housing, working habits, food and travel will mark a break with recent history. In contrast, the "Green Technologies" scenario relies primarily on technological development. In 2050, our ways of living, working and travelling will remain focused on the individual, but energy use will be more efficient (lighter, electrified vehicles, for example), with widespread technological improvements across all sectors.

These technologies will be widely accessible to those who can afford them, but will be a drain on resources and exclude the poorest groups in society. It is clear to see why it is essential that decision-makers and citizens are involved in the debate. ■

The french STRATEGY wavers between regional cooperation and green technologies

THE IMPACT OF CARBON NEUTRALITY BY SECTOR

In line with the targets of the European Union, France has committed to achieving carbon neutrality by 2050. The goal is to cut emissions to 256 $MtCO_2$ equivalent by 2030, and further reduce them to approximately 80 Mt by 2050. But what do these figures really mean? To clarify their significance and the substantial efforts required, we have assessed their impact on six key economic sectors. For each sector, we have explored the implications of achieving carbon neutrality by 2050 through two different approaches: the first focuses on communal sharing and moderation (the "Regional Cooperation" scenario, as termed by Ademe), and the second on technological innovation (Ademe's "Green Technologies" scenario).

In 2050

WHAT ENERGY MIX FOR 2050?

France's electricity mix is currently dominated by nuclear power, which accounts for over 60%. All the scenarios outlined by Ademe and RTE (Electricity Transport Network) indicate that even if new nuclear reactors are constructed, the preferred option of France since 2022, the mass development of renewable energies (EnR) will be key to meeting French carbon neutrality targets, with the first goal being to reduce greenhouse gas emissions by 55% by 2030. By reducing final energy consumption by 30% (Green Technologies scenario) or 46% (Regional Cooperation scenario) by 2050, compared to 2022, "it would be possible to establish an energy supply which is based on more than 70% renewable energies," according to Ademe. This reduction in the share represented by nuclear power will result from the forthcoming spate of closures of existing power plants, many of which were built in the 1980s, even if their lifespans have been extended to 50 or 60 years. The new "EPR2" reactors are not expected to be available before 2035-2040. Beyond the Ademe scenarios, the current French strategy to relaunch its nuclear industry is more in line with RTE's most nuclear-centric energy scenario, which proposes a 50/50 balance between renewable energy and nuclear power by 2050.

SCENARIO FOR 2050 >>
Regional cooperation

- France's total emissions reduced to 68 $MtCO_2$
- Final energy demand: 829 TWh
- Moderate increase in total electricity consumption to 535 TWh
- Energy consumption linked to heating down by around 50%.
- Large-scale renewable energy plants
- No new nuclear power plants

SCENARIO FOR 2050 >>
Green technologies

- France's total emissions reduced to 85 $MtCO_2$
- Final energy demand down to 1,074 TWh
- Increase in electricity consumption to 652 TWh
- Surplus electricity demand met by offshore wind power and/or new nuclear power plants
- Energy consumption linked to heating down by more than a third
- Nearly 100 TWh from liquid agrofuels and electrofuels

FREEPIK

FOOD FAR-MING

In 2050

REDUCING MEAT CONSUMPTION, BUT BY HOW MUCH?

Carbon neutrality requires major changes in the French diet. Ademe's two proposed scenarios both advocate for a shift to diets with "less consumption of animal protein, while prioritizing, quality meat". This change would "free up farmland both in France and internationally, facilitate the transition to organic farming, and prioritize less intensive farming systems, thus promoting regional resilience".
This trend is more prominent in the "Regional Cooperation" scenario, which prioritizes food "from sustainable, highly localized production", thereby "greatly reducing" the environmental impact of food. Conversely, the "Green Technologies" scenario is primarily focused on "enhancing performance to minimize the environmental footprint of food production".

SCENARIO FOR 2050 >>
Regional cooperation

- Meat consumption reduced by half
- Share of organic food: 50%
- Reduced water needs for irrigation
- Priority given to biomass combustion and methanization for energy use

SCENARIO FOR 2050 >>
Green technologies

- 30% decrease in meat consumption
- Share of organic food: 30%
- Increased water needs for irrigation
- Increase in areas given over to energy crops

HOUSING DEVELOP-MENT

In 2050

MASSIVE RENOVATION OR DEMOLITION-RECONSTRUCTION?

In the Regional Cooperation scenario, the cities are "building upwards in a controlled manner". A process of rebalancing of regions is taking place in favor of medium-sized towns. It has become more commonplace for people to share buildings, living spaces and equipment. Energy-efficient renovation is being rolled-out on a massive scale. By contrast, in the Green Technologies scenario, cities are the main focus of public interest and activities.
This attractiveness ultimately requires "a cycle of demolition and reconstruction requiring mass consumption of natural resources," according to Ademe. However, "supply of less carbon-intensive building materials and systems would grow. Technical innovation would lead to more efficient equipment."

SCENARIO FOR 2050 >>
Regional cooperation

- 80% of housing renovated to be more energy efficient
- Home size in line with household size
- Cities structured according to their ecological framework

SCENARIO FOR 2050 >>
Green technologies

- Half of housing renovated to be more energy efficient
- 12 million housing units built in dominant city areas
- High rate of land take (equivalent to the size of Paris each year)

MOBI-LITY

In 2050

MORE OR LESS TRAVEL?

In the "Regional Cooperation" scenario, there would be a slight reduction in travel demand, with a shift towards "greater proximity and the development of various modes of transport, such as commuter trains, cargo bikes, folding bikes, velomobiles, and mini-cars, etc." In addition, freight traffic would drop by 35% in ton-kilometers, due to a reduction in both the volume of trips and the distances travelled. In this scenario, the use of rail and waterways would more than double, reflecting a significant modal shift, according to Ademe. Conversely, in the "Green Technologies" scenario, while transport demand for goods would remain stable, there would be an overall increase in transport demand. Efforts would focus on accelerating the decarbonization of transport fleets and energy sources, particularly through the electrification of vehicles.

SCENARIO FOR 2050 >>
Regional cooperation

- 95% drop in emissions
- Travel demand down by 8%
- 17% fewer kms traveled per person
- Nearly half of journeys made on foot or by bike

SCENARIO FOR 2050 >>
Green technologies

- 94% reduction in emissions
- State support to manage mobility: infrastructure, widespread remote working, carpooling
- Increase of 13% in km traveled per person.
- 30% of journeys made on foot or by bike

INDUS-TRY

In 2050

GLOBALIZATION OR RELOCALIZATION?

A major challenge for France is to combine, for reasons of security, the country's reindustrialization (which requires a surplus of energy) and the overall reduction of energy consumption and greenhouse gas emissions. For Ademe, scenarios involving more moderate energy consumption which are based on the principles of relocalization and reindustrialization, "provide better protection against both geopolitical and natural risks than scenarios that rely on decarbonization technologies and continued globalization." However, both cases will require an industrial transformation.

SCENARIO FOR 2050 >>
Regional cooperation

- Qualitative growth; "reindustrialization" of key sectors linked to regions; regulated international trade
- Industrial policy that prioritizes efficiency (energy, materials) and a circular economy model
- Production in value rather than in volume
- Dynamic local markets
- 80% of steel, aluminum, glass, pa- per, cardboard and plastics to come from recycling
- Household waste: 184 kg per year /inhabitant

SCENARIO FOR 2050 >>
Green technologies

- Green growth with regional specializations, international competition and globalized trade
- 11 $MtCO_2$ captured and stored in high-emitting industrial zones
- Technology becoming a means of mitigating and adapting to climate change
- Strong demand for aluminum, lithium, cobalt, etc.
- 60% of steel, aluminum, glass, cardboard and plastics to come from recycling
- Household waste: 363 kg per year /inhabitant

FREEPIK

In 2050

STRONG NATURAL ENVIRONMENTS OR GEOENGINEERING?

As a result of climatic conditions in particular, the amount of carbon stored in soil and forests has fallen in recent years (due to increased tree mortality rates, less forest growth and fires), decreasing from 37 $MtCO_2$ in 2015 to 18 $MtCO_2$ in 2019, potentially dropping to 8 $MtCO_2$ per year for the period between 2024 and 2028. However, CO_2 storage must, at least for the most part, offset France's remaining greenhouse gas emissions in 2050. Moreover, wood is still a key part of the French renewable energy mix forheating. By developing a forest renewal policy, with tree species that are "better adapted" to climate change, France hopes to stem this crisis before the end of the decade. If this approach is unsuccessful, it is likely that technological solutions for capturing atmospheric CO_2 (capture using machines, biotechnologies and other geoengineering technologies, etc.), which are energy-intensive, land-intensive, and remain unproven on a large scale, will come to the fore. "Unless major efforts are made to moderate energy consumption," estimates Ademe.

SCENARIO FOR 2050 >>
Regional cooperation

- Natural, agricultural and forest carbon sinks (93 $MtCO_2eq$) offset remaining greenhouse gases emissions (CO_2 capture/storage for cement only)
- Use of biomass for non-food purposes to double
- Moderate rates of wood harvesting from forests
- Agricultural practices conducive to CO_2 capture

SCENARIO FOR 2050 >>
Green technologies

- Exploitation of natural resources which reduces the capacity of carbon sinks ($64MtCO_2eq$). Technological solutions for the capture/storage of atmospheric CO_2 required to store 21 $MtCo_2$
- Use of biomass for non-food purposes multiplied by 2.5
- Increasing rates of wood harvested
- Technology cannot offset all the environmental impacts (land take, water resources)

FORESTS & ECO SYSTEMS

Construction of the Enercon WEA E-126 at the Feldheim wind farm, Germany, October 29, 2019

PAUL LANGROCK / REA

WORLD
ALL SHADES OF GREY

Globally, achieving carbon neutrality is still a long way off. According to an evaluation by Climate Action Tracker, only a few countries are making sufficient efforts, while the results of all the other nations assessed were decidedly mixed.

BY VINCENT RONDREUX/WE DEMAIN

As the climate crisis intensifies, human efforts to mitigate the situation are faltering. Independent experts belonging to the Climate Action Tracker (CAT) scientific consortium, have assessed the actions taken by the world's largest CO_2 emitters, as well as by a representative group of smaller emitters.

This panel is made up of 39 countries and the European Union, which are collectively responsible for 85% of global emissions. CAT assessed the commitment of each country, with results ranging from "critically insufficient" (projected temperature rise of 4°C or above) to "compatible" with a 1.5°C rise, with intermediate categories including "almost sufficient", "insufficient" (projected temperature increase of 2°C or above), and "highly insufficient" (rise of 3°C or more). According to the CAT scientists, none of the countries assessed is aligned with the most ambitious target of the Paris Agreement, which was unanimously adopted by 195 countries. Like all EU countries, France's individual commitment was not analyzed, as the evaluation covered the European Union as a whole. Nonetheless, France has yet to adopt the EU's latest commitments, which have also been labeled "insufficient" by these experts.

FROM PROMISES... TO REALITY

At best, the climate policies and targets of certain countries have been rated as "almost sufficient" by the Climate Action Tracker (CAT), most of which are developing nations with minimal CO_2 emissions that are not major contributors to the climate crisis. In stark contrast, the world's biggest emitters—such as China, the USA, the European Union, India, and Russia—are lagging well behind in their efforts. For instance, if all countries were to adopt the same policies as Russia, global warming could potentially soar to 4°C. Even more alarming, if the approach of the United Arab Emirates, host of the recent COP28, was adopted worldwide, global warming could potential exceed 4°C. These projections are not based on the various promises made by these countries, but their current actions, which reveal a different story.

The BIGGEST emitters are lagging well behind in their efforts...

In contrast, Costa Rica's climate strategy has been deemed "in line" with the 1.5°C target of the Paris Agreement. However, due to limited resources, Costa Rica's 2030 targets fall short of a trajectory that is genuinely compatible with the 1.5°C goal. A similar situation is unfolding in the Gambia. Overall, according to CAT's estimates, current climate policies and actions will lead to an average global temperature increase of 2.7°C. ■

THOMAS LOUAPRE / DIVERGENCE

PERFORMANCE by STATE

ALMOST SUFFICIENT

Bhutan, Costa Rica, Ethiopia, Kenya, Morocco, Nepal, Nigeria, Norway, Gambia

INSUFFICIENT

European Union, Australia, Brazil, Chile, Colombia, Japan, Kazakhstan, Peru, Philippines, South Africa, Switzerland, United States, United Kingdom

HIGHLY INSUFFICIENT

Canada, China, Egypt, India, New Zealand, South Korea

CRITICALLY INSUFFICIENT

Argentina, Indonesia, Iran, Mexico, Russia, Saudi Arabia, Singapore, Thailand, Turkey, United Arab Emirates, Vietnam

EUROPEAN UNION UNDER SCRUTINY

How is the European Union faring? Overall, its efforts were deemed insufficient, with some interesting nuances. Despite aiming to reduce its emissions by at least 55% by 2030 compared to 1990, the European Union is not doing enough for the experts at Climate Action Tracker. To achieve carbon neutrality, it should "strengthen its reduction target to at least 62%" (not including carbon sequestered in soil and emissions from international aviation). It should "significantly increase its support for climate action in developing countries" and stop investing in fossil fuels. According to these experts, the EU must "focus its efforts on the renewable energy transition" by prioritizing photovoltaics and wind power. The EU must now adopt a reduction target of 95% by 2040. The European Commission proposed a 90% reduction in February (without providing dates for phasing out fossil fuels) which was deemed not good enough for Climate Action Tracker.

NORWAY: GREAT AT HOME, DISAPPOINTING ABROAD

Norway is the only country in Europe to be awarded a Climate Action Tracker rating of "almost sufficient" to limit global warming to 1.5°C. What's its secret? Its electricity mix is practically carbon free, primarily due to hydropower, widespread use of electric and hybrid cars on the road, its ban on the sale of new thermal vehicles from 2025, the significant carbon sink capacity of its forests, etc. The black mark on Norway's record is its tendency to have a negative impact on its neighbors. It exports oil and gas which increases the footprint of countries that consume its fossil fuels. However, these factors are not taken into account when calculating emissions, which is limited to emissions generated on national soil.

OSTA RICA: A STUDENT DOING ITS "FAIR SHARE"

According to Climate Action Tracker, Costa Rica needs to achieve a "small" additional reduction in its emissions by 2030 (amounting to one million tons of CO_2, a 7% improvement on its current target) to be "compatible" with the 1.5°C objective. Nevertheless, scientists emphasize that Costa Rica is already doing its "fair share" in the fight against global warming, with its moratorium on oil exploration and exploitation, renewable energy representing a share of close to 100% of its electricity production; increasing electrification of vehicles; development of charging infrastructure; new policies to address emissions from livestock and waste, significant sources of emissions domestically; increased carbon storage in soil and forest, etc. In addition, Climate Action Tracker states that Costa Rica actually needs external support to implement additional policies that would strengthen its target.

Philippe Brassac

Chief Executive Officer of Crédit Agricole S.A.

"THERE IS CURRENTLY A LACK OF LOW-CARBON INITIATIVES"

At the helm of the mutual bank since 2015, Philippe Brassac continues to make the case for a decentralized approach to the energy transition. Investment in coal must be abandoned and local renewable projects must be rapidly implemented that are accessible to all and which promote citizen participation.

Interview by WE DEMAIN
Portrait by Joël Saget / AFP

At the recent Crédit Agricole general meeting, your Chairman stated: "It is our responsibility to help green the entire economy." What does this statement actually mean?

Philippe Brassac : This statement was intended to provide clarification on an issue that has caused some confusion. Greening the economy does not simply mean greening our own balance sheet. Many marketing adverts on the energy transition have made people believe that greening our own balance sheet is enough to green the economy, which is not the case. Greening our balance sheet means no longer financing projects associated with fossil fuels, but this does not directly contribute to the overall energy transition. The example of coal illustrates this point: despite all French banks having stopped financing coal, global coal consumption has continued to rise steeply. Therefore, we must focus on investing in projects that offer replacement solutions and support the transition.

So, in your view, what concrete actions must be taken to green the economy?

Philippe Brassac : Firstly, we must support the emergence of renewable and low-carbon energy solutions. Surprisingly, no one asks us about our work with Total on renewable energies, they only want to know about fossil fuels. Our primary responsibility is to finance the production of renewable energies. Then, we must ensure that society as a whole is equipped to connect and migrate towards these green energies. The transition does not only affect energy producers, it also concerns consumers, households and businesses. It is essential to develop the infrastructure necessary to connect, transport and use these renewable energies.

You referred to the specific challenges involved in implementing renewable energy projects. Can you elaborate on this?

Philippe Brassac : Yes, the lack of projects is a major problem. Despite financing clearly being available from many banks and investors, the turnaround times for renewable energy projects are extremely lengthy, often because of the large number of permits required. The slow progress of such projects completely contradicts the idea that financing is the main problem. If more projects were authorized more quickly, financing would no longer be seen as the main critical issue. It is therefore essential to simplify and introduce faster administrative procedures that enable these projects to be developed quickly.

"We must ensure that SOCIETY as a whole is equipped to MIGRATE towards these green energies"

Philippe Brassac

Does the current perception of renewable energies create a barrier to their development?

Philippe Brassac : There is definitely a general misconception around renewable energy. There are already substantial systems in place for renewable energy production, they are no longer in the development stage, and are economically viable and competitive, even without public subsidies. But to ramp up the pace, we must also invest in the necessary distribution infrastructure and in the electrification of regional areas in particular, which will be key to their use in many developing countries. In addition, citizen participation is crucial to the success of this transition. If local populations can get involved in certain projects, they are likely to be better accepted locally with more community engagement.

What practical actions has Crédit Agricole taken for the energy transition?

Philippe Brassac : We have created professions specializing in the energy transition, which are grouped together under Crédit Agricole Transitions & Energies. We do more than just finance projects, we advise and support our customers to invest in renewable energies, as well as the equipment and changes required to reduce their carbon footprint. In addition, we aim to produce 2 gigawatts of installed power ourselves by 2027-2028. We are also working on local projects with Regional Banks which are already involved in renewable energy production. We aim to accelerate the energy transition through our integrated approach, from advice and financing to local production.

What are your thoughts on global challenges, such as planetary boundaries and overconsumption?

Philippe Brassac : Reducing our energy consumption is essential. The planet has quantitative limits, particularly in- terms of natural resources such as water and rare metals. We need to rethink our consumption patterns to make them more sustainable. The energy transition will happen, we need to spearhead profound changes now to ensure the continued viability of our planet. We must incorporate the concept of responsible consumption into our policies and behaviors to ensure a viable future for future generations. It is also crucial to understand that environmental challenges are intrinsically linked to social and economic issues. A holistic approach is needed to address these issues effectively.

You mentioned the importance of local projects and citizen energy. Can you expand on this point?

Philippe Brassac : Citizen energy is essential for a successful transition. Local renewable energy projects allow for better acceptance by local communities and more efficient management of resources. We support local initiatives that promote the involvement of citizens and communities in the production and consumption of renewable energies. This decentralized approach can work in tandem with major energy projects and help ensure a faster and more inclusive transition. We believe in the need to develop energy that is both sustainable and accessible to all, with an emphasis on citizen participation and collective responsibility. By strengthening the social fabric around these projects, we are taking a positive approach that benefits all of society.

How would you assess Crédit Agricole's development since you've been in charge?

Philippe Brassac : First and foremost, thisdevelopment has been supported by the entire Group. In particular, we have integrated social responsibility into all our activities, while focusing on usefulness and sustainability. For us, responsibility should be integral to our approach and not simply an afterthought. In real terms, we've created specific professions to meet the needs of the energy transition, and increased access to healthcare solutions across all of our territories. Integrating responsibility into the development of our activities is essential to ensure our long-term future and to make a positive impact on society. Furthermore, each entity in our Group is aligned with these objectives to maximize our efficiency and impact.

What do you say to young people who are reflecting on their future career and engagement with companies like Crédit Agricole?

Philippe Brassac : I tell them to take responsibility for themselves. Young people are a key asset for the future, but they cannot act as mere bystanders. Simply objecting is not enough, they must take action. Young people must get involved in the institutions that they want to change. By working on the inside, they can really make things happen. It is essential that they play an active role in the transformation of businesses and society to build a sustainable future. They must understand that their role is crucial in changing the status quo, particularly in the energy sector. Crédit Agricole offers many opportunities for those who want to get involved in projects with a strong social and environmental impact.

In conclusion, what key message would you like to get across to readers?

Philippe Brassac : The core message I'd like to get across is one of optimism and action. We can overcome these challenges. However, we must all stand up and be counted. The energy transition and the viability of our planet depend on the commitment of everyone, both young and old, citizens and businesses. It is crucial that we take action together to build a sustainable future. Companies like Crédit Agricole have a key role to play, but they cannot succeed without the active involvement of all stakeholders. We must mobilize and work together to meet the environmental and societal challenges that lie ahead. Every action matters, and together, we can make a major difference to our collective future. ■

WORKING TOGETHER FOR A JUST TRANSITION ACROSS ALL REGIONS

CRÉDIT AGRICOLE'S SOCIETAL PROJECT

Underpinned by our Group's core values, our Societal Project is focused on the welfare of both the planet and people. Aligned with the real economy, it commits all our divisions to tackling the dual challenges of sustainability and solidarity.

ERIC GARAULT / PASCO

TWO CHALLENGES IN ONE: THE CLIMATE TRANSITION AND SOCIAL JUSTICE

For the first time in two decades, 2020 saw a rise in extreme poverty worldwide due to the Covid-19 pandemic. Reported by the World Bank Group, this development underscores the profound inequalities that exist in parallel with the climate, and the emergency intrinsic link between these dual challenges. The Paris Agreement in 2015 and the more recent COP27, which introduced the Loss and Damage Fund for vulnerable nations, emphasize the need for a "just transition".

Crédit Agricole Group also firmly believes that a successful transition hinges on aligning sustainability with social cohesion. A transformative shift of the current economic system is required, and to gain public support, it must be socially equitable.

This transition must ensure protection for the most vulnerable groups in society, including people on low incomes, small businesses that are struggling due to increasingly demanding customers, and isolated communities. The move towards a low-carbon economy should not jeopardize jobs, consumer welfare, or the prospects of future generations. Instead, it presents an opportunity to create a more inclusive economy!

A COLLECTIVE AMBITION

What is needed to make this transition? Evidently, it requires coordinated political efforts on a global scale. But, more broadly, all stakeholders must be persuaded to play their part in this change. It requires a collective transition that is adapted to the situation, while not allowing short-term pressures to make us lose sight of the end goal. It can only succeed through transparent, collective and practical action, which leaves no one behind. What's more, it requires every individual to become their own driving force of change. In 2019,

Crédit Agricole placed this transformative vision at the heart of its raison d'être: "Acting every day in the interest of our customers and society."

CRÉDIT AGRICOLE

The Group focuses on bringing this challenging vision to life on a daily basis, across all of its business lines. From international companies to the lowest-income households, Crédit Agricole aims to provide all its customers with products and services founded on sustainable energy. The Group plans to leverage the strength of its universal banking model (banking, insurance and real estate) to support as many people as possible on the path to carbon neutrality.

OUR POINT OF DIFFERENTIATION: A UNIVERSAL OFFER AND USEFULNESS IN OUR TERRITORIES

Crédit Agricole has transformed its fundamental raison d'être into actionable medium-term goals and objectives through its Group Project, making the Societal Project one of its three key pillars. Officially launched in 2019, the strength and scope of this initiative has gradually been expanded. The Group's roadmap, which sets out ten commitments in a detailed plan, is driven by an ambition to support all its customers in the

climate transition and serve as a catalyst and accelerator of social transformation.

FOCUS ON SOCIAL IMPACT

Crédit Agricole's historical development is underpinned by two key concepts that have driven its active participation in major societal change.

The first concept is based on being useful to society, by contributing to the common good, making progress accessible to all, adapting to changing needs, and supporting major transformations.

The second concept is our universal offer, which benefits everyone, from the least affluent to the most prosperous, whether micro-businesses or international corporations, and across all regions and distribution channels.

On December 1, 2021, Crédit Agricole introduced its Societal Project, which exemplifies the social and environmental aspects of its strategic vision. This ambitious plan is founded on three essential pillars that underscore the Group's commitment to societal well-being.

Firstly, the Group is rising to the challenge of climate change by committing to a low-carbon economy and positioning itself as a key player in financing the energy transition. It has incorporated the climate emergency into all its activities and supports eco-friendly and innovative projects, while striving to reduce its own carbon footprint.

Secondly, Crédit Agricole is addressing social cohesion and inclusion, by promoting access to banking services for all, launching initiatives to fight against financial insecurity, and strengthening its role as a local bank.

Lastly, the Group is supporting transition in the agricultural and agri-food industry, by fostering innovation and competitiveness in these vital sectors for the economy and food sovereignty, and promoting sustainable practices that help protect the environment.

This Societal Project reaffirms Crédit Agricole's role as a committed social actor, that is aware of its responsibilities to society and determined to actively contribute to a more sustainable and inclusive future. ■

10 COLLECTIVE COMMITMENTS TO SUPPORT THE SOCIETAL PROJECT

TAKING ACTION FOR THE CLIMATE AND THE TRANSITION TO A LOW-CARBON ECONOMY

#1 CONTRIBUTE to achieving carbon neutrality by 2050 by reducing our operational environmental footprint and that of our investment and financing portfolios

#2 ADVISE and support 100% of our customers in their energy transition

#3 INTEGRATE extra-financial performance criteria into the analysis 100% of our financing offers to corporate customers and farmers

STRENGTHENING SOCIAL COHESION AND INCLUSION

#4 OFFER a range of services that are accessible to all our customers, in order to promote social and digital inclusion, and adapt to economic and social change

#5 CONTRIBUTE to revitalizing the most vulnerable areas and reducing social inequalities

#6 FACILITATE the integration of young people through employment and training

#7 PROMOTE gender and ethnic diversity in all Crédit Agricole's entities and its governance

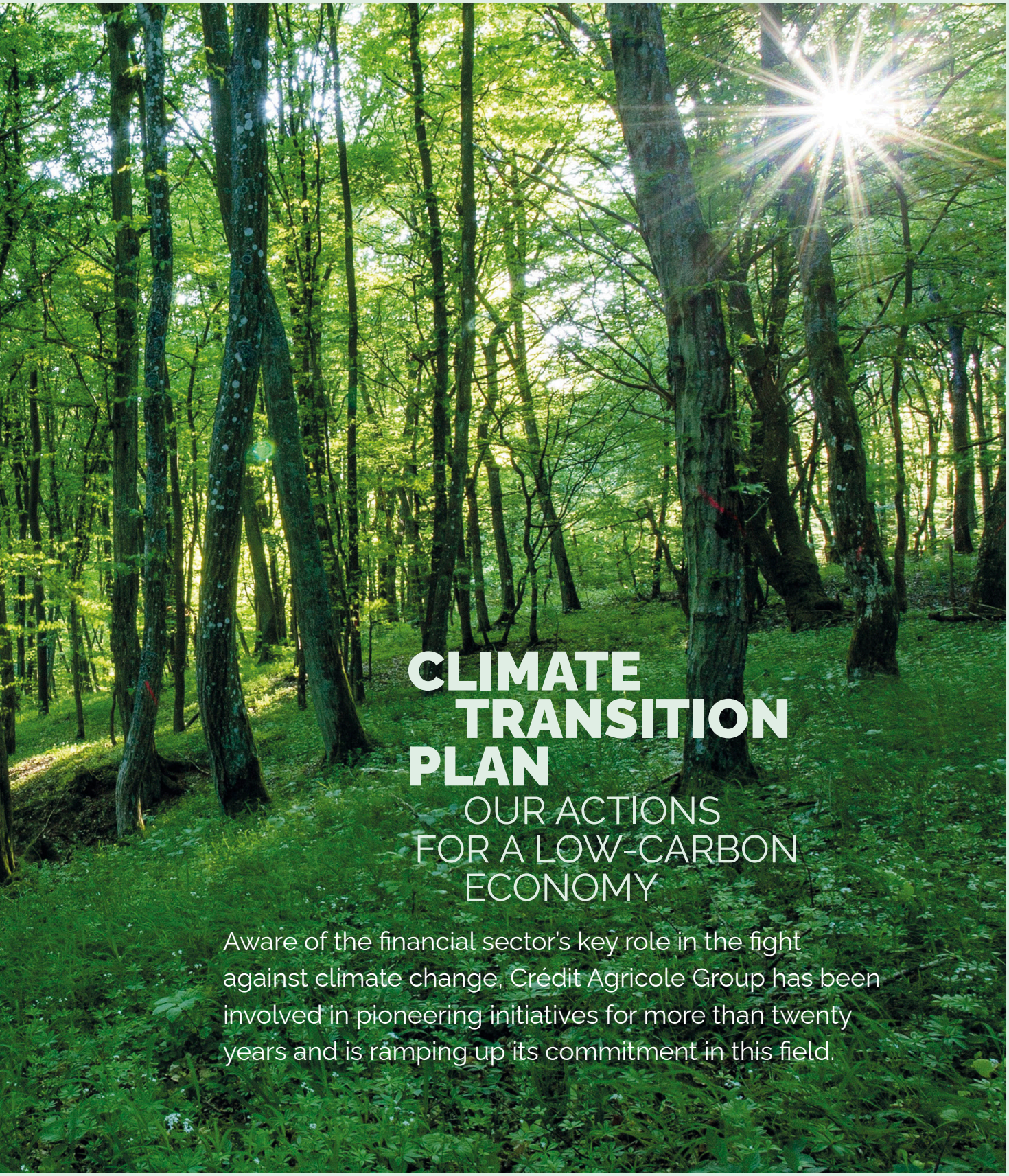
DRIVE TRANSITION IN THE AGRICULTURAL AND AGRI-FOOD SECTORS

#8 PROMOTE the development of more competitive and sustainable agri-food practices

#9 ENABLE the French agricultural sector to actively contribute to the fight against climate change

#10 CONTRIBUTE to strengthening food sovereignty

FREEPIK



CLIMATE TRANSITION PLAN

OUR ACTIONS FOR A LOW-CARBON ECONOMY

Aware of the financial sector's key role in the fight against climate change, Crédit Agricole Group has been involved in pioneering initiatives for more than twenty years and is ramping up its commitment in this field.

Climate change is an enduring reality, bringing with it a host of ecological, socio-economic, and geopolitical consequences. To effectively manage and adapt to these changes, there is a critical need to thoroughly reassess our current model of growth and progress. This urgent call for a transformative shift was conveyed to global leaders by IPCC scientists in their sixth assessment report in 2023, which analyzed the impact of a global temperature rise of more than 2°C.

In view of this challenge, financial institutions must play their part. Their role is to support the economy of tomorrow, by financing socially just transitions based on the latest scientific data. For example, it is widely accepted that two to seven times more financing is required to boost energy efficiency, and ten to thirty-one times more investment is needed to safeguard the agricultural sector[1].

Crédit Agricole is implementing its ESG[2] strategy to support a just and sustainable climate transition, while helping to protect the environment. These two commitments are intrinsically linked to climate objectives. The first aims to promote social cohesion and inclusion, by supporting the most vulnerable economic actors and populations. The second aims to (drastically) reduce the quantity of GHGs emitted into the atmosphere and preserve nature through the sustainable management of the living world and land.

We have been working to fight against global warming and drive the energy transition for over twenty years. The Group joined several pioneering climate finance programs in their early stages (see opposite). From the early 2010s, these commitments led to groundbreaking initiatives. Co-founder of the Green Bond Principles, the Group is now a world leader in green bonds. It has also launched several innovative initiatives (see opposite) to measure and limit the negative impact of its activities on the environment and climate. ■

(1) IPCC (2022). Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
(2) Environmental, social, governance.

FINANCE AND THE CLIMATE: A GROUP COMMITTED TO PIONEERING INITIATIVES

2003
Equator Principles; United Nations Global Compact

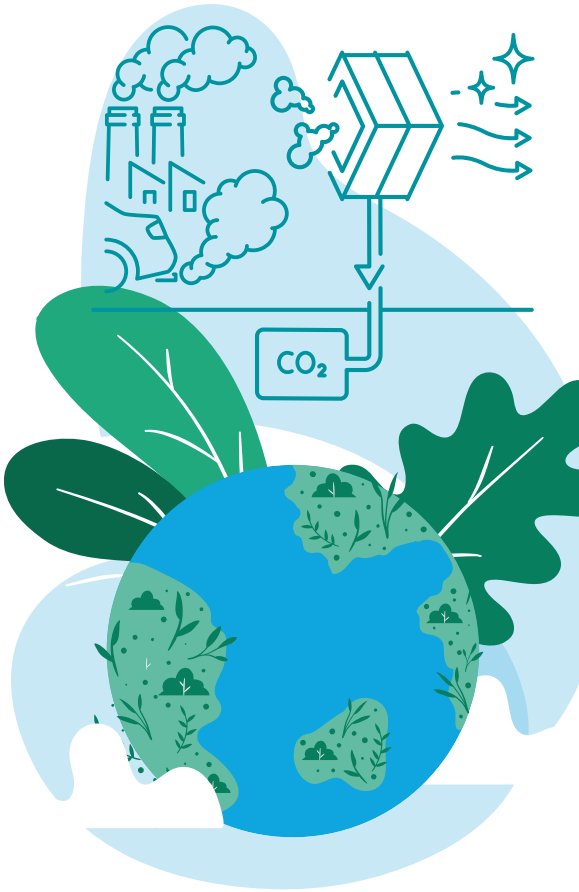
2008
Climate Principles

2011
Principles for Responsible Investment

2016
Science Based Targets Initiative

2019
Principles for Responsible Banking

2021
Principles for Sustainable Insurance: Glasgow Financial Alliance for Net Zero



FREEPIK

DECARBONIZATION: A GROUP AT THE FOREFRONT

2011
Estimation of the carbon footprint of financing portfolios

2012
Refusal to finance Arctic offshore drilling policies for fossil fuels

2015
End of financing for coal mining and power plants

2019
Announcement to phase out support for thermal coal by 2030-2040

OUR GOVERNANCE PLACES THE SOCIETAL PROJECT AT THE HEART OF THE GROUP'S STRATEGY

How do we ensure that the Group takes into account climate and social issues? The Board of Directors of Crédit Agricole S.A. has created a dedicated body, supported by dedicated committees.

At the highest level of the company, the Board of Directors of Crédit Agricole S.A., a public listed company and the central body of Crédit Agricole Group, is committed to integrating environmental and social considerations into the Group's strategic roadmap and operations. The Board actively oversees the Group's social commitments, which are subject to regular evaluations and reports.

To better incorporate social and environmental issues and risks into its decision-making processes, **the Board has appointed a Societal Commitment Committee.** Led by the Chairman of the Board, this Committee plays a pivotal role in reviewing the Group's ESG (Environmental, Social, and Governance) strategy and in overseeing its policies and actions for extra-financial performance. The operational implementation of this strategy and management of ESG risks across the business divisions are orchestrated by cross-functional committees, which operate under the guidance of Crédit Agricole Group's top-level executives.

EXECUTIVE COMPENSATION LINKED TO SUSTAINABLE PERFORMANCE

Remuneration of our executive directors goes beyond short-term economic results, taking into account sustainable performance criteria, in line with our Net Zero commitments. In 2023, for the CEO and Deputy CEOs, the weight given to these criteria in terms of variable remuneration has been standardized and increased to 20%: 10% for societal CSR and 10% for environmental CSR. Since 2023, 33.33% of variable compensation in the form of shares has also included two sustainable performance targets: helping to achieve carbon neutrality by 2050 and increasing ethnic and gender diversity among the entities and governance of Crédit Agricole S.A.

Dedicated committees to inform and monitor the Group's ESG strategy

The Group Societal Project Committee, chaired by a Regional Bank President, is made up of 12 members, half of whom are General Managers of Crédit Agricole S.A. and the other half Regional Bank Managers. It monitors the implementation of the Group's societal commitments, ensures the ESG strategy is consistently applied across the Crédit Agricole Group and reviews prospective projects relating to ESG issues.

The ESG Strategy Committee, chaired by the CEO of Crédit Agricole S.A., reviews the constituent elements of the ESG strategy (sector-specific policies, standards, guidelines, position papers, methodologies, Net Zero trajectories, etc.), submits them for validation to the Board of Directors of Crédit Agricole S.A with the opinion of the Societal Commitment Committee, and monitors the implementation of the Group's commitments

Reporting directly to the Chief Executive Officer of Crédit Agricole S.A., **the Corporate Social Responsibility (CSR) Department** leads a business unit tasked with defining, promoting, monitoring, and coordinating the implementation of Crédit Agricole's commitments. This department plays a crucial role in enhancing the Group's societal impact by ensuring that environmental and societal issues are central to the Group's strategic initiatives and its interactions with stakeholders. This business line consists of the CSR departments of various Crédit Agricole S.A. Group entities, and is governed by **the Corporate Social Responsibility Departments Committee.**

The Group also established the **Net Zero Sponsor Committee** in 2022, which is chaired by a Regional Bank President and is made up of General Managers of the Regional Banks and Crédit Agricole S.A.. Its main function is to define Net Zero trajectories for the organization.

The multidisciplinary **Scientific Committee** is composed of 11 external scientists who are recognized experts in climate and environmental issues. This committee meets at least three times a year with the mission to highlight issues relevant to the Group's commitments and put forward ESG (Environmental, Social, and Governance) recommendations. ■

OUR CLIMATE TRANSITION PLAN TO ACHIEVE CARBON NEUTRALITY BY 2050

The Group's climate transition plan to help achieve net zero emissions focuses on three key areas: financing renewable energy and low-carbon infrastructure, supporting all of our customers and gradually phasing out fossil fuels.

Since June 2019, Crédit Agricole Group has been implementing an ambitious plan to gradually reallocate the Group's financing and investment portfolios. This strategic shift is aligned with the targets of the 2015 Paris Agreement and reference scenarios, such as those produced by the International Energy Agency (IEA), to support achieving carbon neutrality by 2050. This plan gained considerable momentum in 2022 and was further expanded in December 2023. It is structured around three complementary areas:

1

Finance and invest massively in renewable energy, low-carbon infrastructure, clean technologies and energy efficiency projects.

2

Support all customers in adapting to climate change: private individuals, professionals, businesses and farmers, etc.

3

Accelerate the phasing out of fossil fuels by halting all financing of new fossil fuel extraction projects and adopting a selective approach to support for energy companies in order to reduce greenhouse gas (GHG) emissions generated by this sector twice as quickly as stipulated in the IEA's Net Zero by 2050 scenario.

ISTOCK

We have been working tirelessly in these three areas, aiming to reshape a model based on the simultaneous growth of wealth production (a driver of economic and social prosperity) and GHG emissions (the cause of climate change and disruption to eco-systems). And all of this while promoting social cohesion and taking into account the reality on the ground in different regions. Striking the right balance between driving the development of low-carbon energies and the continued and measured use of fossil fuels may seem contradictory. However, it is a necessary condition for ensuring a just transition for the entire population.

There are several aims behind identifying and quantifying the impacts, risks and opportunities of the Group's climate action: reducing negative impacts, increasing positive impacts, and identifying opportunities linked to climate adaptation.

ACCELERATING THE DEVELOPMENT OF RENEWABLE ENERGY

Already positioned as one of the world's leading issuers of green bonds and the top private financier and institutional investor in renewable energies (RE) in France[3], Crédit Agricole Group is determined to ramp up its commitment and play an even more active role in the energy transition.

Between 1997 and 2023, Crédit Agricole contributed to building 108.6 GW of installed renewable energy capacity, i.e. almost twice the current renewable energy production capacity in France and around 50% of the renewable energy production capacity that needs to be installed in France by 2050. In recent years, we have stepped up our efforts: between 2020 and 2023, Crédit Agricole S.A. Group's outstanding amounts for renewable and low-carbon energy financing increased by 80%, rising from €9.5 billion to €17.2 billion. To capitalize on this momentum, we have created a new energy production and supply business line: Crédit Agricole Transitions & Energies.

Having invested close to €5 billion, Crédit Agricole Assurances is also helping to finance installed renewable energy capacity of 13.5 GW, the equivalent of the electricity used by 5 million French households. For its part, Amundi Energy Transition's portfolio includes renewable energy projects, either built or under construction, representing a capacity of 1.4 GW.

Crédit Agricole Transitions & Energies has allocated nearly €650 million in financing to renewable energy projects in various regions and, by 2028, will have a renewable energy production capacity of 2 GW.

Findings have shown that renewable energy capacity will be developed on a local scale. Regional authorities are not passive bystanders when it comes to global energy policy; they have a dynamic and essential role to play in ensuring the success of the energy transition. For example, among the many initiatives launched by the Group's entities, the Centre Loire Regional Bank, which hosted the General Meeting of Crédit Agricole S.A., established an Energy Transition consulting agency in 2022, which quickly proved effective by supporting 150 solar power projects and numerous methanization initiatives in 3 departments, totaling nearly €240 million.

(3) ASF, SOFERGIE perimeter.

See our electricity production sheet on page 152

SUPPORTING ALL CUSTOMERS IN THEIR TRANSITIONS

As a universal bank, Credit Agricole supports its 53 million customers on a daily basis. When defining decarbonization trajectories for its financing portfolios, it is essential that the entire Group is mobilized to support all our customers in adapting to climate change. These transitions can take many forms and Crédit Agricole Group aims to provide support as closely aligned as possible with the real economy, by developing innovative solutions and focusing on four major sectors:

Mobility (automotive, shipping and aviation sectors)

This sector generated the highest emissions in France in 2022, accounting for almost a third[4] of GHGs. More importantly, it is the only major sector that has not reduced its emissions since 1990, but rather increased them (+5%). For this reason, there is an urgent need to support this sector's transition.

Building use (commercial and residential real estate sectors)

Accounting for 16% of GHG emissions alone, there is significant potential to reduce this sector's carbon footprint, provided that we rise to the challenge of responsible consumption and make the switch to renewable energy.

Industrial manufacturing and construction (steel and cement sectors)

Accounting for 18% of GHGs, this sector has already reduced its emissions by almost half since 1990 but requires major investment to continue on this path.

Agriculture

A historic sector of Crédit Agricole, it accounts for 19% of GHG emissions and need to step up its transition efforts.

(4) 2023 annual report of the High Council for the Climate

See our sector sheets from page 144

STEPPING UP EFFORTS TO PHASE OUT FOSSIL FUELS

Our plans for phasing out fossil fuels are progressing well, with a 63% reduction in financing associated with absolute emissions in the Oil & Gas sector between 2020 and 2023. We have set the ambitious target of reducing these emissions at twice the rate recommended by the International Energy Agency, and the Group recently announced that it would not be financing any new fossil fuel extraction projects. Between 2020 and 2023, financing associated with the extraction of fossil fuels fell from €9.4 billion to €7.5 billion, a drop of 20%. At the same time, financing for renewable energy increased by 80%.

At COP28, a review of the Paris Agreement was conducted, revealing that the initial roadmap had fallen well behind schedule. On December 14, we therefore decided to publish an updated version of our climate transition plan, which focuses our financial resources on accelerating the development of renewable and low-carbon energy projects, and stated the following:

– we will not be financing any new fossil fuel exploration or production projects;

– our financing projects are reviewed on a case-by-case basis, according to a regularly updated assessment process which takes into account energy companies' commitment to the climate transition;

– we promote the development of renewable energies by energy companies via earmarked financing or green bonds.

With a very real impact:

– we no longer finance specialized independent energy companies, as their operations only involve fossil fuels;

– in the oil & gas sector, we only participate in the issue of "green" bonds (Green Bonds or Sustainability-Linked Bonds).

ABACA

Find our Oil & Gas sector sheet on page 146

AMBITIOUS TARGETS TO HELP ACHIEVE CARBON NEUTRALITY BY 2050

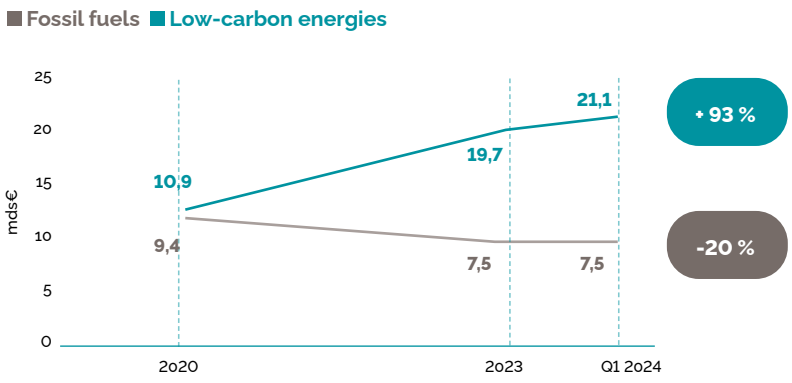
Having joined the three international Alliances defined in the table opposite (NZBA, NZAMI and NZAOA), and in accordance with the commitments made as part of its membership of GFANZ (Glasgow Financial Alliance for Net Zero), Crédit Agricole has set itself ambitious objectives to help achieve carbon neutrality by 2050.

Setting Net Zero goals	
Net Zero Banking Alliance	**60 %** of outstandings covered by 2050 Net Zero objectives by 2023
Net Zero Asset Managers Initiative	**18 %** of assets under management in funds/mandates aligned with 2050 Net Zero objectives by 2025
Net Zero Asset Owner Alliance	**–25 %** reduction in carbon emissions per €M invested in 2025 vs. 2019[1]

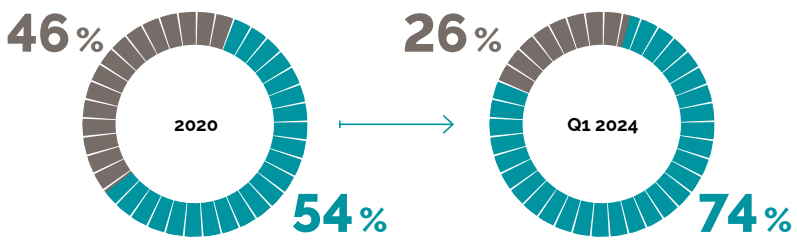
(1) Carbon footprint of the listed investment portfolio in shares and corporate bonds.

MONITORING THE GROUP'S ENERGY MIX

Financing of the energy sector: focus on outstandings for fossil fuel extraction and low-carbon energy[(1)] of Crédit Agricole Group



Change in the relative share of fossil extraction outstandings compared to low-carbon energy outstandings



Impact of our strategy to gradually reallocate our portfolio

For €2 of disinvestment from extraction of fossil fuels

€9[(2)] allocated to renewable energies

(1) Low-carbon energy outstandings consist of renewable energies produced by the customers of all our entities including nuclear energy outstandings for CACIB (CACIB low-carbon energy outstandings: €7.4 billion in 2020, €13.8 billion in 2023.
(2) Scope: financing of Crédit Agricole Group.

MILESTONES IN OUR CONTRIBUTION TO NET ZERO

We started contributing to carbon neutrality in the 2010s and these efforts are ongoing. Below are some key dates representing major milestones in our decarbonization agenda on a regional, national, European and international scale.

BEFORE → 2021 → 2022 → 2023 →

ALLIANCES WITH PIONEERING INITIATIVES

- **Equator Principles: United Nations Global Compact (2003)**
- **Climate Principles (2008)**
- **Principles for Responsible Investment (2011)**
- **Science Based Targets Initiative (2016)**
- **Principles for Responsible Banking (2019)**

- **Strong commitments based on three alliances (NZBA, NZAM, NZAOA) made by the Group's key entities:** CACIB, Amundi, CAA…

See our sector sheets from page 144

OUR COMMITMENTS AND POSITIONS

- Refusal to finance Arctic offshore fossil fuel drilling policies (2012)
- **Coal:**
  - End to financing for thermal coal mining and power plants by 2030-2040 (2015)
  - Commitment to stop financing metallurgical coal mining (no projects in portfolio) (2019)

- **Strong commitments on fossil fuels Oil & Gas:**
  - Complete halt of financing for projects directly linked to the extraction of unconventional hydrocarbons
  - No direct financing of new oil extraction projects
  - Protection of the Arctic: no direct financing of oil and gas projects
- **Announcement of decarbonization trajectories for our financing portfolios in five sectors:** Oil & gas, Commercial real estate, Power, Automotive and Cement

- **Oil & Gas:**
  - Halt to financing of new fossil fuel extraction projects
  - End to financing of independent producers working exclusively in oil and/or gas exploration and production
- **Announcement of decarbonization trajectories or targets for our financing portfolios in five complementary sectors:** Aviation, Shipping, Steel, Residential real estate and Agriculture

2025 → 2030 → 2040 → 2050

OUR COMMITMENTS IN FIGURES

Amundi
Introduction of a complete range of actively managed "Net Zero" savings products
As part of its ESG Ambitions 2025 Plan:
- 18% of assets under management in funds/ mandates managed with objectives
- €20 billion in assets under management in savings solutions with a social impact

CACIB
- 80% increase in exposure to low- carbon energy (production and storage) compared to 2020
- Significant decrease in exposure to oil extraction of 25% compared to 2020

Crédit Agricole Assurances
- Increase in investment in the production capacity of renewable energy plants by Crédit Agricole Assurances to 14 GW.

- Commitment to a 25% reduction in the footprint of the listed portfolio in shares and corporate bonds by 2025

- Total withdrawal from the thermal coal sector in EU and OECD countries
- Reduction in absolute emissions linked to our financing of the Oil & Gas sector
- Reduction in emission intensity linked to our financing in seven other key sectors: Power, Automotive, Commercial real estate, Steel, Cement, Shipping and Aviation. Allocation of resources to agriculture and residential real estate

- Total withdrawal from the thermal coal sector in the rest of the world

See our sector sheets from page 144

ACHIEVE THE TARGET OF NET ZERO EMISSIONS ACROSS ALL OF OUR OPERATIONS: FINANCING, INVESTMENT AND INSURANCE

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Jean Jouzel

Paleoclimatologist

Éric Campos

Chief Sustainability and Impact Officer at Crédit Agricole S.A.

"TOGETHER WE MUST CRAFT THE COLLECTIVE NARRATIVE FOR A BRIGHTER FUTURE"

Given the complexity of the climate challenge, the paleoclimatologist and the Chief Sustainability and Impact Officer at Crédit Agricole try to solve the conundrum of a transition where we must strike a new balance between the economy and nature.

Interview by Arthur Hily/WE DEMAIN
Portraits by Magali Delporte

Ten years after the Paris Agreement, the effects of global warming have escalated. Where do we currently stand in terms of climate action?

Jean Jouzel : We should remember that two innovations came out of the Paris Agreement. Firstly, a quantified target to limit the increase in global temperatures to below 2°C by the end of the century, and, if possible, to less than 1.5°C. To achieve this, we must reduce greenhouse gas (GHG) emissions, hence the ambitious goal of achieving carbon neutrality by 2050. The second innovative aspect of this agreement was its universal reach: it was ratified by virtually all countries, even if politics sometimes gets in the way, as with the United States under Donald Trump. The Paris Agreement is therefore both a success and a failure! Because there is a wide discrepancy between the stated objectives and the commitments made. It was drawn up in 2015, and updated in Dubai in 2023. By 2030, there'll be 45% excess emissions. As a result, we're heading towards a rise of 3°C. In short, the Paris Agreement set ambitious targets, but, in reality, no one is on course to meet them.

How does the climate emergency fit in with economic reality?

Éric Campos : Our current economic model is not sustainable as it stands. We need to rethink our practices, while taking into account planetary boundaries. The climate emergency requires a model where we can prosper while consuming less energy and emitting less carbon. This model of prosperity must also take into account other planetary boundaries, such as limits relating to nature and living things. Greenhouse gas emissions soared in the 1980s with globalization. Today, goods move around in a virtually borderless world. China is the world's factory and the food we eat has traveled further than Christopher Columbus and Vasco da Gama combined before reaching our plates. We definitely shouldn't retreat back behind our borders, but we clearly need to rethink the way we operate. This transformation is likely to have as profound an impact on production as on our daily habits.

Banks are an essential part of this transition. How has the sector changed over the last ten years?

É.C. : Things have changed considerably for a bank like Crédit Agricole since the Paris Agreement. In 2015, Crédit Agricole decided to stop financing coal extraction; in 2016, this was extended to factories that produce energy from coal. From that point onwards, we gradually began to incorporate the climate emergency into our business. Since then, we've worked hard to integrate climate issues into all of our activities. Today, we are focusing our resources on low-carbon energies and on supporting society in the shift toward more responsible energy consumption. We are also phasing out fossil fuels twice as quickly as scientists have proposed. We have thus become an active participant that is supporting, and perhaps even advancing, the economy's transformation.

J. J. : Capitalism today is not compatible with global warming. The rules of the World Trade Organization (WTO) form the backbone and are designed to maximize trade. If we wanted to, the first step would be for the WTO to establish a carbon tax, but it will never do that.

"Our economic MODEL is not sustainable as it stand. We clearly need to RETHINK the way we operate."

Éric Campos

> “If we wanted to, the first step would be for the WTO to establish a carbon TAX, but it will never do that.”
> **Jean Jouzel**

The Minister of Ecology asked scientists to predict what France would look like in 2100 with a rise of 4°C. Is this the scenario you're preparing for, as a climatologist and a banker?

J. J. : This scenario is perfectly legitimate and even somewhat optimistic. Continents are warming up twice as fast as the oceans, and there has been a marked increase in Western Europe. However, this request is a double-edged sword, as it could give the impression that we're going to overcome these challenges, which I don't think is true. We need to brace ourselves for increasingly severe and frequent extreme weather events: heatwaves, drought, torrential rain, and flooding, exacerbated by rising sea levels, which will have serious repercussions. While adapting to a 4°C increase in France is theoretically possible, it would be extremely difficult in practice. The agricultural sector will bear the brunt of these changes, but we must consider the impact well beyond French borders. Some countries are already approaching “lethal heat” conditions, with temperatures above 35°C and humidity of over 80%. Under these conditions, people may not die immediately, but they can no longer go about their normal daily activities. For example, in 2022, when temperatures soared above 50°C in Iran, the government advised citizens to stay indoors. A rise in temperature of 3°C would render large parts of the planet uninhabitable, especially in equatorial and tropical regions.

É.C. : Each additional tenth of a degree will, in varying but inevitable ways, affect property, infrastructure, working and living conditions, health, standards of living, our businesses and financial stability, and certain assets will lose value. The drought hitting the Pyrénées-Orientales and the repeated floods in the Nord-Pas-de-Calais and Gard regions, are just two major examples of the many disasters which are already sweeping across the nation.

What work are you doing to adapt to these scenarios?

É.C. : We're working on this by drawing on all of the Group's expertise. It's a highly complex issue, with many factors that are interrelated, and we must take into account how they interact. We are therefore working with scientists in particular, like the work we're doing with our Scientific

Committee, created in 2019. As a continent, Europe has really seized upon the issue of sustainability and economic development with the Green Deal (which sets out the economic future of the EU). Henceforth, the impact of the climate on a company's value and a company's impact on the environment must be included in the information reported by that business. This concept is known as "double materiality". In 2025, 50,000 European companies will be required to publish this data, as well as their targets for improvement and the sustainable policies put in place to achieve them. At Crédit Agricole, we are prepared to support economic players with these "transition pathways". We are aware that this rapidly enforced adaptation, along with strict European regulations, is harsh and restrictive. But we also see it as a fantastic opportunity to build a sustainable world, by leveraging what has always been one of Crédit Agricole's strengths and the driving force behind our entrepreneurial spirit: our usefulness to society and universal offering to meet the needs of all our customers, from the least affluent to the most wealthy.

We are gradually coming to realize that this crisis goes beyond our CO_2 emissions. With biodiversity loss and shortages of raw materials, are these actions global enough?

É.C. : We cannot adopt a global approach, we need to work step by step, and by region. The first stage of our work involved the decarbonization of our financing and investment portfolios. This work is conducted in accordance with international methods that have been adopted by the majority of our colleagues and validated by scientific research. What's most important is that we work closely with our customers who are implementing transition pathways, to ensure that we don't work in silos. And I can tell you that many companies are very committed, because these pathways now provide a strategic advantage and real competitive differentiation. However, the rules of the game need to be the same for everyone, to prevent opportunism and short-term thinking. To do this, we need a legislative and regulatory framework that restores equality in terms of requirements. Without this framework, this challenge to our model of overconsumption, with goods produced on the other side of the world, will run out of steam. Restrictive rules can lead to creative leaps forward and encourage certain players to cooperate in useful and positive ways. But to force a paradigm shift, we need to generate goodwill from all sectors, including culture, art, philosophy, music and sport. Inventing a different approach to prosperity is not something that can be imposed by the Ministry of the Economy. Together, we must craft the collective narrative for a brighter future.

J. J. : It's clear that we need consider every impact that we are having on nature. Global warming is already the third biggest cause of biodiversity loss but, if left unchecked, it could become the leading cause. Resources are also an important issue. Questions are being raised with regard to the availability of certain materials and metals, including those required to develop renewable energies. Innovation will provide answers, as in the case of batteries made from accessible materials, like sodium. We also need to draw inspiration from nature to develop solutions, such as for carbon storage, etc. Global warming must bring us closer to nature, collectively, on a worldwide scale.

And yet, we see the continued growth of Amazon, Shein and air-conditioned megacities What does this make you think about our ability to change?

É.C. : I don't believe that demand will be the driving force behind society's transformation. When we give our customers the option of green or non-green savings vehicles, their return is generally the key deciding factor. We fully understand that purchasing power is fundamental for our customers. In the short time we have left to avoid exceeding acceptable temperatures, we

must quickly make adaptation measures affordable, in terms of price and, for example, remove administrative constraints to help promote renewable energies which are now becoming competitive. At the same time, we must move from ownership to use, because by "commercializing use" companies can reap the benefits of making goods more sustainable. This transformation will be driven by major clients, particularly with respect to innovation, the ability to provide alternatives to fossil fuels and to rethink business models. For things to change, companies need to believe that their growth is dependent on a more responsible approach to consumption, and that their performance model will benefit from a change of direction. And for consumers, there needs to be an upside to switching to renewable energy. Affordable pricing is key.

> "INVENTING a different approach to PROSPERITY is not something that can be imposed by the Ministry of the Economy."
> **Éric Campos**

Could this be the starting point for new ideals that break with consumerism?

É.C. : Yes. When you ask people if they want to live in a hospitable natural environment, they all say yes. Whatever the country or culture, 99% of our aspirations are the same. We want to protect our children, we want them to have a better life than our own, we want to show respect for the world and live in peace and tranquility. How do we make this possible? By showing them that there are more benefits to protecting nature rather than destroying it. How do we go about this? By trying to demonstrate that ecosystem services are essential. We are working on this at the moment. It's not easy but we are getting the message out there. Let's not forget that half of the world's GDP is linked to free services provided by nature, such as pollinating insects!

J. J. : We need economic levers to drive this transition. And I fear that without imposing a real price on carbon, we're not going to get there.

Will this help us overcome the barriers to transition, as illustrated by the Yellow Vest protests, or more recently, challenges to the Green Deal?

J. J. : If we look at the consequences of global warming as a whole, one of the main risks is rising inequality. During heatwaves in cities, people in the most unsuitable housing are the ones that cannot afford to go elsewhere. If we don't get a hold on global warming, there is a real risk of society becoming increasingly tough. Conversely, say we achieve carbon neutrality– maybe not by 2050 but in the second half of the century–I believe that we will have a good quality of life. Fossil fuels produce essential energy, but also cause massive urban, industrial and noise pollution. There are three keywords in the climate fight. I've already mentioned equality. The second is solidarity, which is lacking between countries, generations and social classes. If we

> “If we manage to COMBAT climate change, we need greater SOLIDARITY at all levels.”
>
> **Jean Jouzel**

manage to combat climate change, we need greater solidarity at all levels. The third keyword is sobriety, without which we will not succeed. But we’re not there with any of these things yet.

É.C.: We can see what needs to be done on a global level. But these actions will only pay off in the long term, and economic players are finding it hard to balance their efforts. There’s also a lot of cynicism towards those who succeed and get rich by taking advantage of short-term opportunities, which nevertheless jeopardizes the future. We are voicing a desire for change in a world where there is still a great thirst for power, a world where radicalism is fomented and geopolitical threats and murderous violence are on the rise. That’s why we must value goodwill and creative energy, as well as the women and men who work tirelessly to better humanity. The transformation of our society will set the stage for competition between countries and between companies. There will be winners and losers. Certain models of society will be impacted and others will have to weather the storm and assert themselves. The imperative need for climate transition must therefore go hand in hand with a collective vigilance towards these key issues which will determine how tomorrow’s world is shaped. The climate issue also raises a number of questions. How can we make progress in a world that is not entirely focused on solving this serious problem? Well, I believe that we must give power back to the regions! Our ability to adapt will rely heavily on regional ecosystems. We are beginning to realize that conflicts and radicalism can be resolved when people live in the same place together and can exchange ideas. Jean Jouzel talked about solidarity and equality. There are places where these values are upheld. What we lack is a collective narrative. What kind of model do we want to put in place? One that is more respectful of living things, but also efficient and pleasant? We need to create this narrative. And to do so, as history has shown, countries must take the initiative and prove that it can be done. ■

OUR NET ZERO CONTRIBUTION TARGETS FOR 2050

As the top financier in the French economy, the tenth largest bank in the world, Europe's leading asset manager and the number one insurer in France, Crédit Agricole has committed to a major, Group-wide transformation that places responsible banking principles at the heart of its activities and organizations, to achieve carbon neutrality by 2050.

FREEPIK

2050

As a member of the Net Zero Banking Alliance, Crédit Agricole has committed to reducing emissions linked to its financing. This program, launched in April 2021 as part of the United Nations Environment Program Finance Initiative (UNEPFI), brings together 144 international banks, representing just over 40% of global banking assets[1]. Institutions that join this alliance undertake to align their own investments and financing portfolios with the goal of net zero emissions by 2050. This ambitious goal commits banks to setting an intermediate target for 2030 or before, in accordance with strict guidelines. All that remained was to define a method and concrete strategies for achieving these targets.

FINANCING

REDUCING EMISSIONS LINKED TO OUR FINANCING

(1) *https://www.unepfi.org/net-0-banking/members/*

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DECARBONIZATION
THE STRATEGY OF CRÉDIT AGRICOLE

A FLEXIBLE AND PRAGMATIC METHODOLOGY

In line with its efforts to join the Net Zero Banking Alliance (NZBA), Crédit Agricole has adopted a methodology that combines a bottom-up approach with a progressive strategy. This methodology focuses on ten sectors that constitute approximately 60% of Crédit Agricole Group's outstandings and account for over 75% of global greenhouse gas emissions.

The bottom-up approach consists of co-constructing a methodology based on science and market standards, that are common to and shared between our different entities; then working on individual trajectories within each one, to take into account the specific nature of each business, the local or regional context; and thus capitalizing on each area of expertise. Once the trajectories for each entity have been finalized, they are consolidated at Group level to produce a coherent trajectory for Crédit Agricole Group.

The progressive strategy is twofold. It involves gradually defining decarbonization trajectories and progressively onboarding all our entities. In 2022, we announced our commitments in five sectors (Oil and gas, Automotive, Power, Commercial real estate and Cement) for CACIB, CAPFM, CAL&F, LCL and CA Italia. In 2023, we added five new sectors (Aviation, Shipping, Steel, Agriculture and Residential Real Estate) to cover a wider scope: CACIB, CAPFM, CAL&F, LCL, CA Italia, and the Regional Banks.

This approach reflects our determination to create impact with our customers by steering these key sectors towards technologies that underpin a low-carbon future. Crédit Agricole has embarked on an ongoing journey and will continue its efforts in the years to come: the scope currently covered by these decarbonization trajectories for the ten sectors will be expanded, as will the number of sectors, and the number of Group entities. Crédit Agricole's objective is to contribute as effectively as possible to achieving carbon neutrality by 2050. The Group has chosen to use benchmark methodologies and standards (GHG Protocol, PCAF, SBTI, etc.) to define carefully-chosen targets based on forecasts and action plans. For the sake of transparency, Crédit Agricole S.A. would like to point out that its methodologies are subject to change, as are the quality of data and the reference scenarios. The Group undertakes to publish its emissions annually for the sectors to which its commitment relates, as well as to report any major changes to its methodology. Finally, it should be noted that the defined targets, trajectories and action plans will be presented each year to the Group's Board of Directors.

SETTING TARGETS

The emissions reduction targets are based on scientific methodologies and data (Crédit Agricole was assisted by a dedicated Scientific Committee). These emissions are specific to each sector, therefore, one or more indicators have been or will be defined for each one. A summary of Crédit Agricole's approach and methodology is provided in the table below.

The targets are:

Based on scientific data		To align its portfolios with the goal of limiting global warming to 1.5°C, Crédit Agricole based its trajectories on the work of the International Energy Agency (NZE by 2050 scenario) and was supported by its Scientific committee. For some sectors, the NZE by 2050 scenario has been replaced by sector-specific scenarios.
Specific to each sector		Each sector has a role to play in the energy transition towards a low-carbon world, according to its specific characteristics and levers for action. Carbon emission reduction targets have thus been defined for each sector.
Useful in the decision making process for each business line		For each sector, one or several indicators have been defined to assess companies' performance and progress in achieving decarbonization. These indicators are monitored and managed to facilitate ongoing dialogue with customers and enable informed financing decisions to be made.
Based on the best data available to date		To determine the baseline for emissions by sector, information from multiple data sources is collected and revised. The quantity and quality of available data can have a significant impact on these baseline figures. Given the gaps in available data today, we plan to update our methodology as this information improves.

DEFINING STEPS

Our approach is based on five major steps during which we make key methodological choices.

1 MATERIALITY ANALYSIS AND PRIORITIZATION OF SECTORS

Ten priority sectors

In the first instance, in 2022, the Group set reduction targets in five sectors: Oil and natural gas, Power, Automotive, Commercial real estate and Cement. Then, in 2023, the Group extended this initiative to five other key economic sectors: Residential real estate, Aviation, Steel, Agriculture and Shipping.

To select these priority sectors, we took into account a variety of factors:

- their contribution to global greenhouse gas emissions;
- Crédit Agricole's level of exposure to these sectors;
- the existence of recognized decarbonization trajectories based on scientific data for these sectors;
- their inclusion in the list of sectors prioritized by SBTi and NZBA;
- the feasibility of calculating the baseline value and defining trajectories during this first phase of work.

These ten sectors thus cover 75% of the Group's global financed GHG emissions and 60% of its outstanding amounts.

2 CALCULATING THE BASELINE FOR FINANCED GHG EMISSIONS BY SECTOR

Scope of assets under consideration

To set achievable targets, we first estimated the baseline of financed emissions for each sector under consideration. To establish these baseline values, we had to address a number of methodological issues. For example, we determined the scope of assets included in order to measure Crédit Agricole's exposure in relation to its customers.

To date, a number of considerations have led us to include all our medium- and long-term loans (>1 year) to businesses and individuals:

- medium- and long-term loans relate to the financing of real activities in each sector;
- short-term loans, which are more volatile and therefore more complex to manage, often represent operating debt, cash flow or consumer credit; ;
- for businesses, more than 90% of Crédit Agricole Group loans are medium or long-term;
- lastly, the decarbonization levers at Crédit Agricole's disposal are less effective in the short term: our customers' commitment and the financing of the transition require long-term implementation.

PCAF methodology

To calculate these baseline values, we used the financed emissions accounting methodology developed by PCAF, the acronym for Partnership for Carbon Accounting Financials (a global initiative to measure and publish financed greenhouse gas emissions, which we joined in 2022). This methodology is recognized by the GHG Protocol, which is a benchmark for carbon accounting standards. PCAF allocates customer emissions to the institutions which finance them according to the following formula:

$$\text{FINANCED EMISSIONS} = \frac{\text{Group Exposure}}{\text{Value of the company or asset financed}} \times \text{Customer or asset emissions}$$

To attribute financed emissions to banking institutions, the PCAF methodology only takes into account used funds (funds actually drawn down from a customer's available credit). However, we consider that the funds committed (total credit that Crédit

Agricole makes available to a client) more accurately reflect our commitment to our clients, and that they constitute a more stable measure[1].

For each calculation of financed emissions, PCAF issues a data quality score between 1 and 5. A score of 1, the highest score, means that the data used comes from real-life data on the financed third party and that the calculation of this third party's emissions has been verified by a third party. A score of 5, the lowest score, means that the data used comes from sector-wide and/or regional data, and is based on averages (also called proxies).

2020 as the baseline year

Finally, we chose 2020 as the baseline year2 and 2030 as the intermediate target year. The year 2020 as a baseline meets SBTi and NZBA requirements, which require this reference to be no more than two years before the year of publication of the reduction targets. Furthermore, this decision was motivated by the fact that Covid did not have a significant impact on financing in 2020 (except in the aviation sector[2]).

3 CHOICE OF METRICS (PHYSICAL VS ABSOLUTE INTENSITY) AND SCENARIO

How do we quantify emission reductions?

One of the key decisions in defining a climate strategy is selecting the type of reduction target to use. The reduction target can either be in absolute emissions, or in emission intensity, depending on sector-specific factors.

- For an absolute value target, a fixed percentage of reduction in greenhouse gas emissions is defined; for example, reducing 2020 baseline emissions by 75% by 2030.
- For a carbon intensity objective, a target greenhouse gas emission rate is defined in relation to a specific activity flow; for example, kilograms of CO_2 released per megawatt hour (MWh).

The advantages of an emission intensity target

We believe that the most appropriate method to use is that which measures the physical intensity of emissions. It offers the advantage of encouraging sectors to make the transition to lower-emitting companies, projects and technologies. An objective in absolute value could result in disengagement among certain customers, while an objective in intensity helps us to support our customers in their transition. For example, in the power sector, an intensity target can help direct financing towards renewable energies.

This decision to set a physical intensity target was approved by the Crédit Agricole Scientific Committee. If necessary, it may be revised according to regulatory requirements or market standards.

Exception for the Oil & Gas sector

We have made an exception for the Oil & Gas sector for which an absolute reduction target is required to achieve net zero emissions objectives: the main strategy for decarbonizing a barrel of oil is not to extract it at all. At the same time, we measure and monitor our emissions in absolute value for all sectors, to ensure proper management.

Choosing a reference scenario

To achieve our goal of net zero emissions by 2050, we must define a decarbonization trajectory for each sector. To do this, we studied various scenarios. For most sectors, we have decided to use the Net Zero Emission 2050 reference scenario (IEA NZE by 2050 scenario published in 2021), which is based on a temperature increase limited to 1.5°C. For example, for commercial and residential real estate, we replaced this scenario with the CRREM v2021 scenario, which has an equivalent carbon budget, to ensure better geographic and/or sectoral granularity.

(1) With the exception of the Oil and Gas and Shipping sectors
(2) For the Aviation sector, 2019 was chosen as the baseline year to negate the impact of the Covid pandemic.

4 DEFINING INTERMEDIATE TARGETS AND ACTION PLANS

Based on the selected metrics and scenarios, Crédit Agricole has set an intermediate target for 2030 and established a specific trajectory for each sector. These have been set out in the form of practical action plans for our various business lines. To facilitate this process, the Net Zero core team regularly works with subsidiaries and entities, with support from the teams responsible for gathering and centralizing feedback from business line managers. For each sector, one or more performance indicators have been or will be defined to measure progress on achieving the decarbonization goals. These indicators are actively monitored and managed to facilitate ongoing discussions with customers and to make well-informed financing decisions. This ensures that decarbonization trajectories are fully integrated into the strategic planning of the business lines. Overall, more than 900 individuals are actively involved in rolling out and overseeing these action plans.

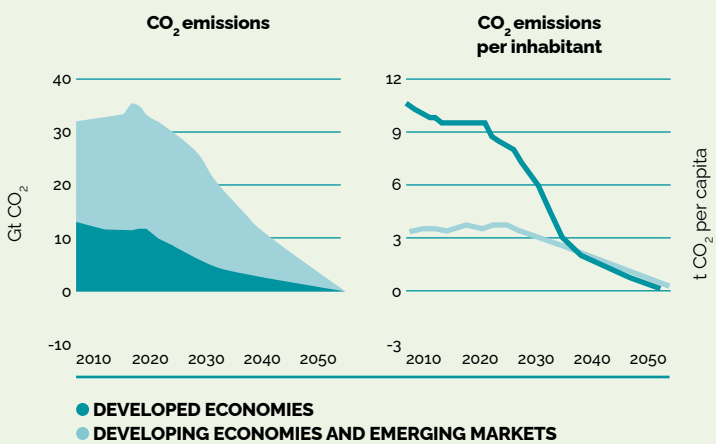
5 CONTINOUS IMPROVEMENT OF DATA AND UPDATING OF SCENARIOS, TARGETS AND PLANS

Regular updates

Emissions scenarios, like those developed by the IEA, are generally updated on an annual basis, to reflect any relevant changes in terms of energy and emissions. These updates may result in changes to trajectories, thus requiring our reduction targets to be updated. At the same time, new data may become available that can be used to improve our emission measurements. Consequently, a key step in our methodology is to periodically reassess input data and key assumptions, and then adjust our targets if necessary.

GLOBAL NET CO_2 EMISSIONS IN THE IEA NZE SCENARIO

(source : IEA)



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POSITION ON CARBON OFFSETTING

As far as possible, and based on the available data, we do not take into account carbon credits that our customers may purchase to offset their emissions: only CO_2 capture and sequestration integrated into our customers' operations are taken into account, since they directly reduce their Scope 1 emissions (as CO_2 is not emitted into the atmosphere). For each of the sectors covered, the decarbonization scenarios selected by Crédit Agricole Group are based solely on the reduction and not the offsetting of emissions. In line with these choices, offsetting initiatives are therefore not taken into account in the Net Zero trajectories. This method is also in accordance with PCAF recommendations, which advises accounting for financed emissions and sequestered emissions separately. As a result, this is the most robust and ambitious scientific approach available for assessing the carbon neutrality objective. Nevertheless, Crédit Agricole continues to work with market authorities to define accounting standards separate from customer carbon credits. At the same time, the Group aims to play a major role in the development and financing of carbon sequestration.

Carbon budget

To meet the requirements for monitoring decarbonization trajectories, the management of Net Zero commitments must be integrated into the budgeting process. Carbon is managed as a scarce and diminishing resource. The carbon aspect of financing is monitored according to sector-specific trajectories, either in absolute value or in intensity, with annual objectives set based on the 2030 targets set by the Group. A team dedicated to carbon management has been created within the Group's Finance Department, responsible for framing and monitoring the carbon trajectories budget which is set annually. We have thus integrated the Climate Impact.

SECTORAL VARIATIONS

The table opposite summarizes, for each priority sector, the metric used, the baseline value from 2020[1] and the reduction target for 2030.

Values are based on the available data and scenario projections as of December 2023. Future updates to the scenarios used or to other data (e.g., to reflect changes, available technologies or economic conditions) will result in changes to the trajectory required to achieve the 1.5°C target, and therefore to our targets for these sectors. Improvements in data availability and quality may also impact our 2020 baseline value in certain sectors1. We will pay particular attention to any changes in these parameters and will evaluate whether our baselines and reduction targets need to be adjusted. Furthermore, in this first stage, we have prioritized the accounting of emissions that we finance based on the long and medium-term loans granted. This scope may change in the future.

(1) For the Aviation sector, 2019 was chosen as the baseline year to negate the impact of the Covid pandemic.

(1) The variations in the 2020 baseline value (24,3 $MtCO_2e$ compared to 26,9 $MtCO_2e$ reported in 2022) can be explained by an improvement in the data collected, following work carried out in 2023.
(2) The target has been updated (–30 % announced in 2022) and constitutes a reduction at twice the rate recommended in the AIE's NZE scenario.
(3) Objective defined in the CRREM scenario 2021.
(4) Including emissions linked to kerosene production.
(5) Revenue Ton Kilomètre (paid ton transported/kilometer).
(6) Including upstream emissions linked to the production of fuel for goods transport "cargo shipping".
(7) Deadweight tonnage per nautical mile (i.e., the maximum tonnage that a ship can transport per nautical mile). The scope currently excludes passenger transport until the carbon intensity indicator formula correction factors for passenger ships have been approved and implemented by the IMO (to be completed by 2025).
(8) Aligned with a "1.5° or low overshoot" scenario.
(9) Physical production is expressed in "tons of cementitious materials", which prevents it from being counted twice and allows comparable intensity between organizations to be defined, in line with the recommendations of the Global Cement and Concrete Association (GCCA).

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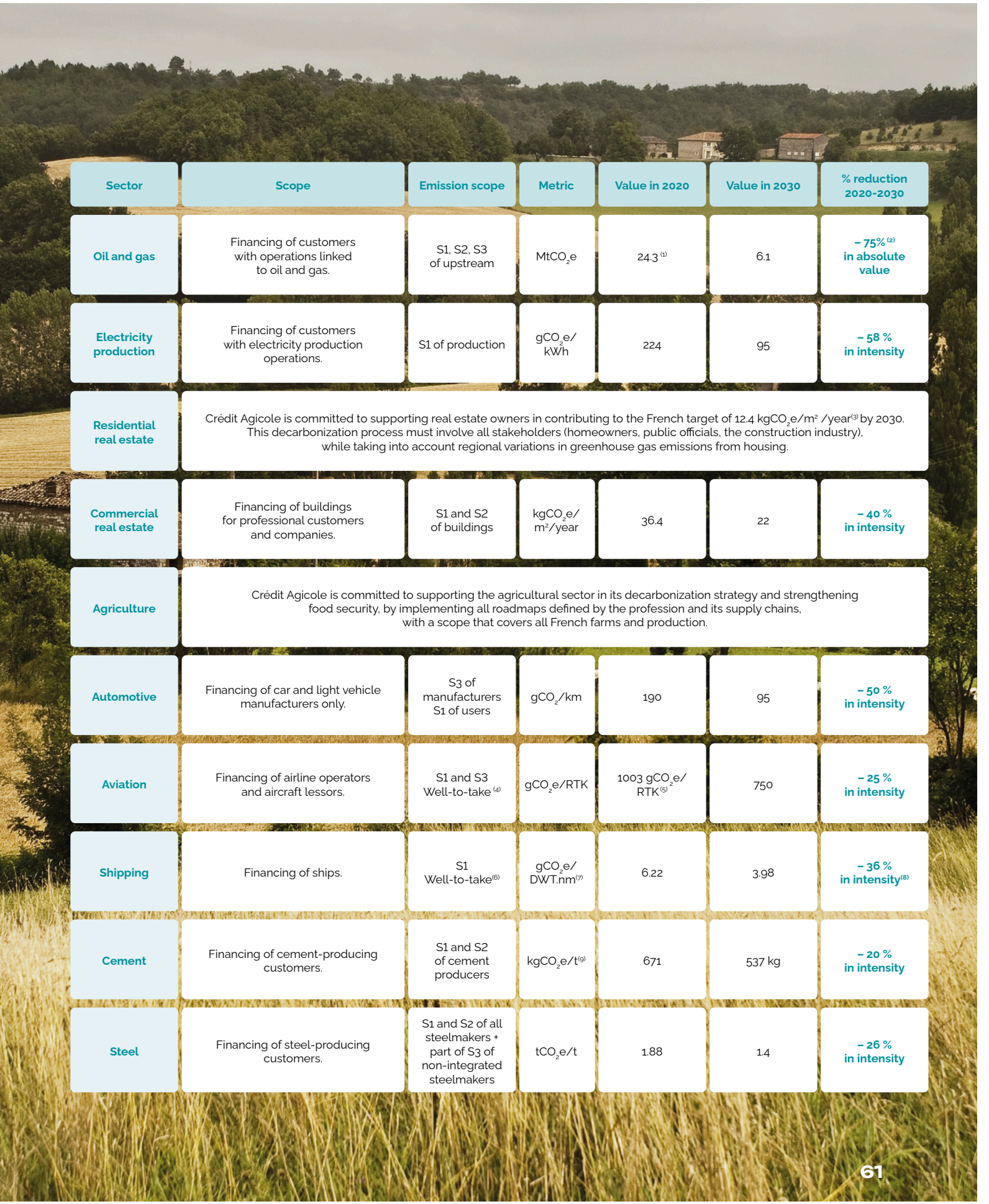
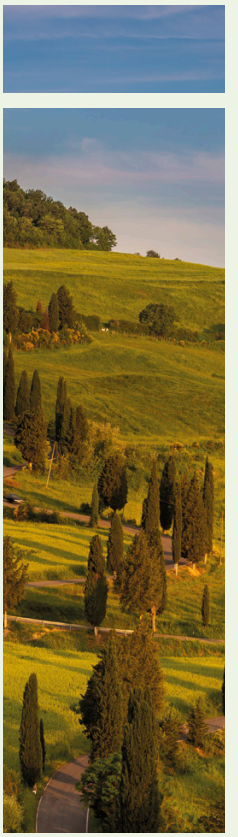


Sector	Scope	Emission scope	Metric	Value in 2020	Value in 2030	% reduction 2020-2030
Oil and gas	Financing of customers with operations linked to oil and gas.	S1, S2, S3 of upstream	$MtCO_2e$	24.3 [1]	6.1	**– 75% [2] in absolute value**
Electricity production	Financing of customers with electricity production operations.	S1 of production	gCO_2e/kWh	224	95	**– 58 % in intensity**
Residential real estate	Crédit Agicole is committed to supporting real estate owners in contributing to the French target of 12.4 $kgCO_2e/m^2$ /year[3] by 2030. This decarbonization process must involve all stakeholders (homeowners, public officials, the construction industry), while taking into account regional variations in greenhouse gas emissions from housing.					
Commercial real estate	Financing of buildings for professional customers and companies.	S1 and S2 of buildings	$kgCO_2e/m^2$/year	36.4	22	**– 40 % in intensity**
Agriculture	Crédit Agicole is committed to supporting the agricultural sector in its decarbonization strategy and strengthening food security, by implementing all roadmaps defined by the profession and its supply chains, with a scope that covers all French farms and production.					
Automotive	Financing of car and light vehicle manufacturers only.	S3 of manufacturers S1 of users	gCO_2/km	190	95	**– 50 % in intensity**
Aviation	Financing of airline operators and aircraft lessors.	S1 and S3 Well-to-take [4]	gCO_2e/RTK	1003 gCO_2e/RTK [5]	750	**– 25 % in intensity**
Shipping	Financing of ships.	S1 Well-to-take[6]	gCO_2e/DWT.nm[7]	6.22	3.98	**– 36 % in intensity[8]**
Cement	Financing of cement-producing customers.	S1 and S2 of cement producers	$kgCO_2e/t$[9]	671	537 kg	**– 20 % in intensity**
Steel	Financing of steel-producing customers.	S1 and S2 of all steelmakers + part of S3 of non-integrated steelmakers	tCO_2e/t	1.88	1.4	**– 26 % in intensity**

2050

"BY MAKING NEW COMMITMENTS TO REDUCE THE CARBON FOOTPRINT OF ITS INVESTMENT PORTFOLIOS BY 2030, AND POSITIONING ITSELF AS A LEADING INSTITUTIONAL INVESTOR IN RENEWABLE ENERGY, CRÉDIT AGRICOLE ASSURANCES IS REAFFIRMING ITS ACTIVE ROLE IN THE TRANSITION TOWARDS A LOW-CARBON ECONOMY"
FLORENCE BARJOU
INVESTMENT DIRECTOR, CRÉDIT AGRICOLE ASSURANCES

The commitment to a low-carbon economy is being implemented via two approaches: as an investor with Crédit Agricole Assurances and as a leader in asset management with Amundi.



INVESTMENT

REDUCING EMISSIONS LINKED TO OUR INVESTMENTS

FREEPIK

INVESTING AS AN INSURER

As an investor, Crédit Agricole Assurances is helping to reduce greenhouse gas emissions worldwide by reducing the carbon footprint of its investment portfolios.

-50%

REDUCTION IN OUR CARBON FOOTPRINT BY 2029

As a result, Crédit Agricole Assurances has set a new target to reduce by 50% the carbon footprint (in tons of CO_2 equivalent per million euros invested) of its investment portfolio in listed corporate shares and bonds and direct real estate by the end of 2029 (compared to 2019).

This new commitment is aligned with Crédit Agricole Assurances' decarbonization trajectory for its investment portfolios and, in particular, the objective set previously to reduce the carbon footprint of its investment portfolio in stocks and listed corporate bonds by 25% by 2025, compared to 2019.

A signatory of the Principles for Responsible Investment (PRI) since 2011, Crédit Agricole Assurances has been committed to financing renewable energy since 2014, and joined the Net Zero Asset Owner Alliance (NZAOA) in October 2021. Launched in September 2019 during the United Nations Climate Action Summit, the NZAOA is made up of insurers and investors who are committed to ensuring the carbon neutrality of their investment portfolios by 2050.

Investing in transition technologies

Meeting these objectives will require a major effort to adapt its investment portfolio. From now on, and in line with the Group's coal sector policy, Crédit Agricole Assurances will not invest directly in any company developing new coal projects and capacities (mines, power plants and transport infrastructure). Its portfolio no longer includes any such companies. Furthermore, in line with its membership of the NZAOA, Crédit Agricole Assurances will no longer invest in new oil and gas extraction infrastructure and will encourage players in the sector to set decarbonization objectives compatible with 1.5°C scenarios.

Three concrete commitments for renewable energy

As an investor, Crédit Agricole Assurances also has a major role to play in supporting transition sectors and technologies. These investments in renewable energies are quantified, as shown in the below table with three key examples.

Leading institutional investor	€128 M invested in a partnership with Innergex	51 % of the surface area of our real estate assets certified by the end of 2023
Crédit Agricole Assurances is committed to ensuring that its investments in renewable energy plants represent a production capacity of 14 GW by 2025 (compared with 5.2 GW at the end of 2020), the equivalent of the average annual consumption of over 5 million homes in France.	We continued to invest in renewable energy 2023. For example, Crédit Agricole Assurances invested €128 million in a long-term partnership with Innergex,to continue and ramp up its development activities in wind and solar power.	51% (or 2.3 million m^2) of real estate assets in our portfolios will have obtained environmental certification by the end of 2023.

"JOINING THE NET ZERO ASSET MANAGERS INITIATIVE AND LAUNCHING THE "ESG AMBITIONS 2025" PLAN ARE PART OF OUR DRIVE TO ACCELERATE AMUNDI'S ESG TRANSFORMATION AND SUPPORT THE GOAL OF GLOBAL CARBON NEUTRALITY BY 2050"

ÉLODIE LAUGEL
Chief Responsible Investment Officer, Amundi

ASSET MANAGEMENT

Amundi, a pioneer of responsible investment
European leader in asset management, with €2,037 billion in assets under its management as of December 31, 2023, Amundi is a pioneer of responsible investment, an integral part of its development strategy since its foundation in 2010. Amundi is a founding signatory of the Principles for Responsible Investment (PRI) and plays an active role in applying these principles through its commitment to sustainable finance and its responsible investment processes. It has also joined the Net Zero Asset Managers initiative.[1].

Integration of ESG criteria
Amundi firmly believes that the integration of Environmental, Social and Governance (ESG) issues has a positive impact on long-term financial performance. Amundi's responsible investment strategy is based, in particular, on the systematic inclusion of ESG criteria in all actively managed open-ended funds2, so that it can offer its customers investment solutions that reconcile financial performance with achieving extra-financial objectives.

Net Zero Asset Managers: a commitment to carbon neutrality
On July 6, 2021, Amundi joined the Net Zero Asset Managers (NZAM) initiative and announced its intention to gradually align its activities and an increasing share of its portfolios with the goal of net zero emissions by 2050, in order to limit global warming to 1.5°C. The NZAM initiative brings together 315 global asset managers responsible for $57 trillion in assets under their management (as of 12/31/2023). The initiative is managed by six networks of founding partner investors: Asia Investor Group on Climate Change (AIGCC), CDP, Ceres, Investor Group on Climate Change (IGCC), Institutional Investors Group on Climate Change (IIGCC) and Principles for Responsible Investment (PRI).

AMUNDI'S KEY COMMITMENTS OVER THE LAST 20 YEARS

This strategy is based on the implementation of the Group's Societal Project which has served as a roadmap for all of Crédit Agricole's entities for the past twenty years.

2004 — Joined the CDP Carbon Disclosure Project

2006 — Signed the Principles for Responsible Investment (PRI)

2014 — Developed low-carbon indices with MSCI on behalf of AP4 and FRR

2017 — • Joined the Finance for Tomorrow Initiative
• Launched the largest green bond fund for emerging markets with the IFC[3]

2018 — Amundi launched a complete range of SRI stock and bond ETFs. Launch of the first ESG plan.

2019 — Established partnerships with the EIB[4] and the AIIB[5]

2021 — • Joined the Finance for Biodiversity Pledge initiative
• Joined the Net Zero Asset Managers Initiative
• Launched the ESG Ambitions 2025 plan

2022 — Announced the first intermediate objective as part of the Net Zero Asset Managers Initiative

(1) The Net Zero Asset Managers international initiative brings together asset managers committed to supporting the goal of global carbon neutrality by 2050
(2) All open-ended funds actively managed by Amundi to which an ESG rating methodology can be applied. (3) International Finance Corporation
(4) European Investment Bank. (5) Asian Infrastructure Investment Bank.

AMUNDI, A STRATEGY FOR RESPONSIBLE INVESTMENT

Three major convictions:
In line with Crédit Agricole Group's policy, Amundi's commitment to responsible investment is based on three convictions:

1

INTEGRATING ENVIRONMENT, SOCIAL AND GOVERNANCE (ESG) CRITERIA INTO INVESTMENT DECISIONS HELPS TO DRIVE LONG-TERM FINANCIAL PERFORMANCE

2

ECONOMIC AND FINANCIAL PLAYERS, AS WELL AS GOVERNMENTS AND CONSUMERS, HAVE A RESPONSIBILITY TO SOCIETY

3

RAMPING UP OUR ESG COMMITMENTS IS THE STRONGEST DRIVER OF AMUNDI'S GROWTH WORLDWIDE

Quantified objectives

Aware of our responsibility and obligations to the customers for whom we invest, we are adopting a progressive approach, with intermediate stages, in setting the objectives of our long-term climate strategy. In early November 2022, Amundi announced that it had set an initial objective for 18% of its managed assets[6] to be associated with Net Zero alignment targets by 2025. Only assets whose strategies (funds and mandates) incorporate explicit and binding alignment objectives, referred to in their legal documentation, will be counted as assets with alignment objectives. This objective is both ambitious and realistic. In particular, opting to set an objective over a short timeframe demonstrates that immediate transformation efforts must be made on three fronts. First of all, on the product front, with investment solutions aligned with the Net Zero trajectory for all types of investors. Secondly, in terms of customers, by engaging with them and providing advice on how to align their investments with the Net Zero objective. And, finally, with respect to issuers, by promoting the adoption and implementation of credible transition plans to achieve the global objective of carbon neutrality. Supporting our customers in making responsible investments is thus essential. Details of this commitment and the methodology adopted are available on the Amundi website.

Supporting customers throughout the Net Zero transition

Amundi provides its customers with a comprehensive range of expertise based on its unique operating model, built around its two main business lines: the provision of savings solutions for individual customers and the provision of investment solutions for institutional investors and large companies. With their wide-ranging expertise, Amundi's management teams aim to meet the specific needs of its customers, by providing tailored solutions across all asset classes. Savers are particularly aware of major environmental and societal challenges. To meet these challenges, Amundi organizes events and promotional campaigns for corporate clients, distributors and individuals to promote its responsible investment practices and highlight ESG and climate issues. Furthermore, in accordance with the "ESG Ambitions 2025" plan and its commitments to the Net Zero Asset Managers initiative, Amundi provides guidance to its corporate clients on the Net Zero transition. The institutional sales force engages in discussions with its customers to understand their needs, challenges and commitments in terms of developing a climate strategy that supports carbon neutrality objectives, and in particular, to propose options that incorporate the protocols for defining the Net Zero alliance targets into their existing strategies.

(6) The scope excludes joint venture partners–which carry out their investment activities independently or autonomously in relation to Amundi Asset Management–fund hosting, and specific advisory mandates for which Amundi does not have fiduciary responsibility or authorization to make investment decisions on our own account or on behalf of clients.

A TARGET OF €20 BILLION IN IMPACT INVESTMENTS BY 2025 THROUGH THE DEVELOPMENT OF OUR RANGE OF HIGH-IMPACT SOLUTIONS

AMUNDI'S "ESG AMBITIONS 2025" PLAN, A NEW STAGE IN ITS CLIMATE AMBITION

In December 2021, Amundi unveiled its "ESG Ambitions 2025" plan, based on ten objectives that provide a practical roadmap for meeting the commitments made for carbon neutrality. The plan is built around three key areas:

1

STRENGTHEN AMUNDI'S SAVING OFFERING TO SUPPORT SUSTAINABLE DEVELOPMENT AND CARBON NEUTRALITY

◗ Include in our open-ended management funds[1] a new energy transition rating. This rating assesses companies' efforts to decarbonize their operations and to develop green activities[2].
- The methodology to integrate an environmental transition rating that covers actively managed open funds has been defined for implementation from 2024.
◗ Offer open-ended funds across all asset classes[3] with a Net Zero 2050 management objective.
- Five asset classes offer at least one Net Zero 2050 Ambition solution. These five assets classes are: Equity Developed Market, Equity Emerging Market, FI Developed Market, Multi Assets and Real Assets.
◗ Achieve the target of €20 Bn in assets under management in high-impact funds.
- These assets had grown to €13.2 Bn by the end of 2023.
◗ Ensure 40% of our ETF range is made up of ESF funds.
- 33% of our ETF range is made up of ESG ETFs.
◗ Develop the ALT04 Sustainability offering within Amundi Technology, a technical solution for analysis to help investors make decisions on environmental and social issues.
sur les enjeux environnementaux et sociétaux.
- The first ALTO Sustainability module was marketed in 2023.

2

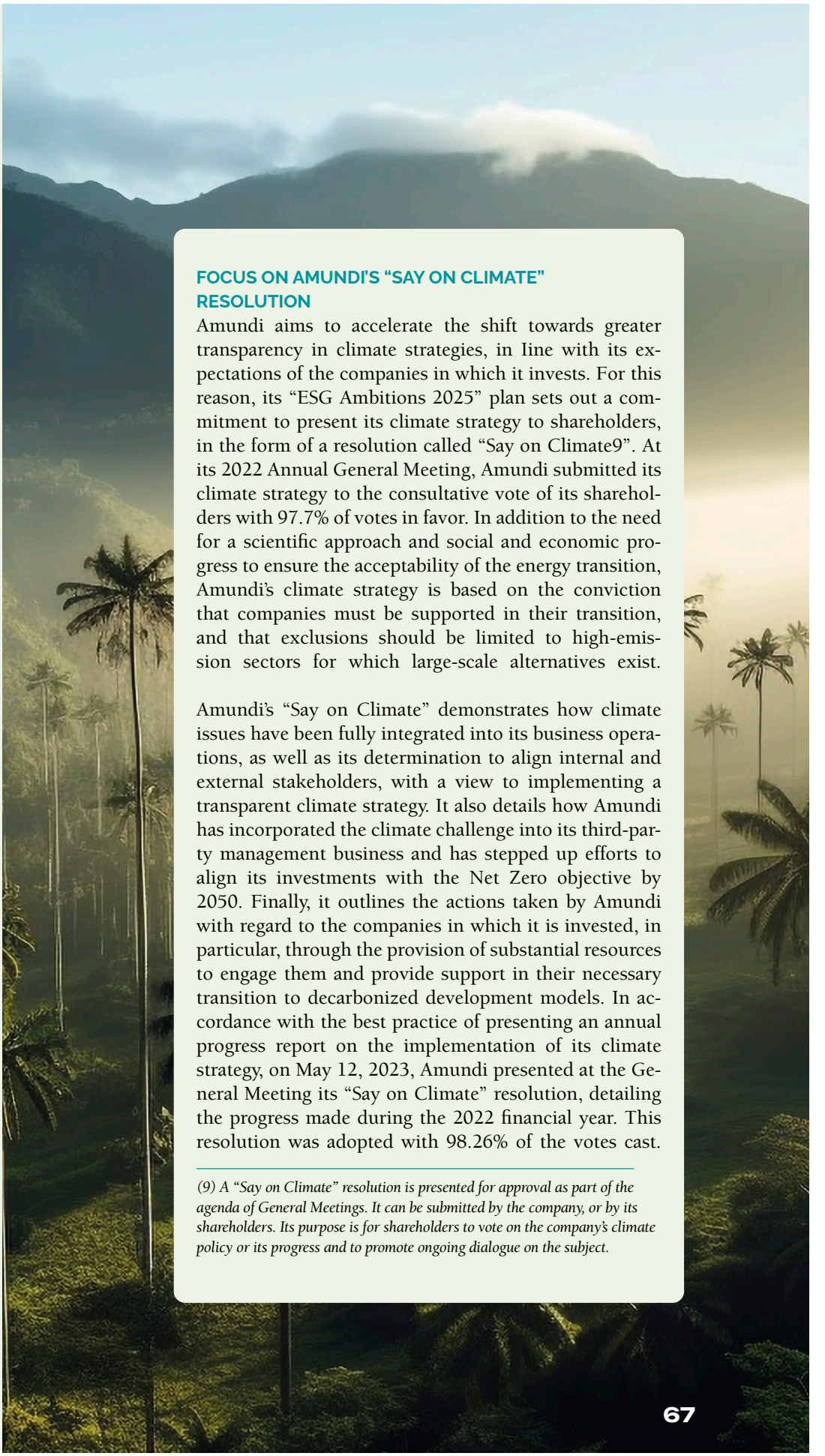
STEP UP AMUNDI'S EFFORTS WITH THE COMPANIES IN WHICH IT INVESTS, PARTICULARLY ON CLIMATE ISSUES

◗ Widen the scope to include an additional 1,000 companies with which we engage in ongoing dialogue on climate issues[5].
- By the end of 2023, we had engaged in dialogue on climate issues with 96 new companies.
◗ Exclude from our investments, a process started in 2022, companies with over 30% of operations in the unconventional oil and gas sectors[6].
- These companies have been excluded from Amundi's investments in 2023, as was the case in 2022.

3

UPHOLD OUR COMMITMENT INTERNALLY, PARTICULAR LY WITH REGARD TO MANAGING OUR ENVIRONMENTAL FOOTPRINT[7]

◗ Take into account the level of success of our responsible investment objectives when calculating the performance share allocations for the 200 senior managers, up to a maximum of 20%. We will also set ESG targets for all our managers and sales staff.
- In 2023, the implementation of this plan accounted for 20% of the criteria supporting the performance share plan awarded to senior managers, and ESG objectives were integrated into the annual targets of 99% of managers and sales staff.
◗ Reduce our own direct greenhouse gas emissions[8] by almost 30% per employee by 2025, compared with 2018.
- We have continued to implement our action plan to reduce greenhouse gas emissions associated with energy (Scope 1 and 2) and business travel (Scope 3). By the end of December 2023, emissions had fallen by 57% per employee.
◗ Present our climate strategy to our shareholders, as we have been doing since 2022, with « **Say on Climate** ».
- The progress report on the implementation of the climate strategy was presented to shareholders at the Annual General Meeting on May 12, 2023 and was approved by 98.26%.



FOCUS ON AMUNDI'S "SAY ON CLIMATE" RESOLUTION

Amundi aims to accelerate the shift towards greater transparency in climate strategies, in Iine with its expectations of the companies in which it invests. For this reason, its "ESG Ambitions 2025" plan sets out a commitment to present its climate strategy to shareholders, in the form of a resolution called "Say on Climate9". At its 2022 Annual General Meeting, Amundi submitted its climate strategy to the consultative vote of its shareholders with 97.7% of votes in favor. In addition to the need for a scientific approach and social and economic progress to ensure the acceptability of the energy transition, Amundi's climate strategy is based on the conviction that companies must be supported in their transition, and that exclusions should be limited to high-emission sectors for which large-scale alternatives exist.

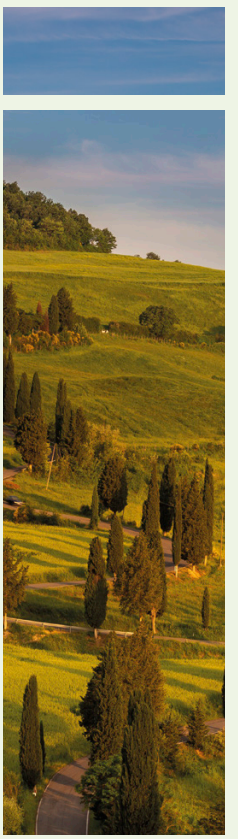
Amundi's "Say on Climate" demonstrates how climate issues have been fully integrated into its business operations, as well as its determination to align internal and external stakeholders, with a view to implementing a transparent climate strategy. It also details how Amundi has incorporated the climate challenge into its third-party management business and has stepped up efforts to align its investments with the Net Zero objective by 2050. Finally, it outlines the actions taken by Amundi with regard to the companies in which it is invested, in particular, through the provision of substantial resources to engage them and provide support in their necessary transition to decarbonized development models. In accordance with the best practice of presenting an annual progress report on the implementation of its climate strategy, on May 12, 2023, Amundi presented at the General Meeting its "Say on Climate" resolution, detailing the progress made during the 2022 financial year. This resolution was adopted with 98.26% of the votes cast.

(9) A "Say on Climate" resolution is presented for approval as part of the agenda of General Meetings. It can be submitted by the company, or by its shareholders. Its purpose is for shareholders to vote on the company's climate policy or its progress and to promote ongoing dialogue on the subject.

(1)Scope of active open-ended funds, when an ESG rating methodology is applicable.
(2) To encourage companies to make this transition, these portfolios will direct a larger share of investment to companies that are making the greatest efforts in their energy transition, rather than those that are not, with the stated objective that they must have a better environmental transition profile that the benchmark in their sector.
(3) Real estate, diversified, developed market equities and developed market bonds.
(4) Amundi Leading Technologies & Operations.
(5) With the objective that these companies define credible strategies for reducing their carbon footprint, which have been voted on at the General Meeting, and that their managers commit part of their remuneration to these strategies.
(6) Tar sands, shale oil and gas.
(7) Management objectives consisting of setting trajectories for reducing the "carbon footprint" of portfolios in line with the 2050 carbon neutrality objectives.
(8) For any Amundi Group entity with more than 100 employees.

FREEPIK

2050



INSURANCE

REDUCING EMISSIONS LINKED TO OUR INSURANCE ACTIVITIES

FREEPIK

PROJECTS

PROMOTING SUSTAINABLE INSURANCE CLUSTERS: FROM NZIA TO FIT

In October 2021, Crédit Agricole Assurances joined the Principles for Sustainable Insurance (PSI), followed by the Net Zero Insurance Alliance in April 2022. Drawing on the experience of the NZIA, in April 2024, the United Nations Environment Program created the Forum for Insurance Transition to Net Zero (FIT), a new structured dialogue and multi-stakeholder forum, led and convened by the United Nations, to support the necessary acceleration and scaling up of voluntary climate action by the insurance sector and key stakeholders.
Crédit Agricole Assurances is one of the founding participatory members of the FIT. As a result, it contributes to the Forum's work together with other players in the insurance market (insurers, reinsurers and brokers), including regulators and supervisors in the sector, Net Zero initiative leaders, standard-setters, and representatives of the scientific and academic community and civil society, etc., to advance Net Zero insurance strategy and practices on a global scale. More broadly, Crédit Agricole Assurances is continuing to implement climate actions and support all of its insured customers in their transition and climate adaptation.

With its long-standing commitment to protect French forests, Crédit Agricole Assurances is proud to be a leader in forest insurance in France. In the event of insured losses, Crédit Agricole Assurances pays insurance compensation to forest owners.
This compensation is used to carry out the necessary work to replant and maintain their forests. As an insurer, Crédit Agricole Assurances' mission is to support all its customers (whether private individuals, professionals, businesses or farmers) and meet all of their needs, throughout every stage of their lives.

We have developed a sustainability framework for internal and external stakeholders to incorporate sustainability criteria across the entire value chain of our offering. It is gradually being rolled out with our stakeholders across all our offers, to ensure that, by 2025, 100% of new offers will be developed using this sustainability framework.

OBJECTIVES FOR 2025

- Promote the transition to new forms of mobility by insuring soft modes of transport and expanding car driver protection cover to include cyclists.
- Support the installation of renewable energy production units on farms with the aim of doubling the number of Multi-Risk Agricultural policies for these activities.
- Provide support for one in four farmers to prepare for climate events by 2025, in particular, with a customized climate crop protection solution (hail insurance, crop insurance, and pasture insurance).
- Develop our prevention systems to limit the personal and material impact of weather events.

2050

The contribution of Crédit Agricole to energy sufficiency goes beyond its financing, investment and insurance activities. As a Group, in its day-to-day operations, Crédit Agricole is making every effort to implement practical actions to reduce its carbon emissions. These efforts have far-reaching implications for business travel, heating, lighting and renewable electricity. The Group is also offsetting part of its residual emissions through initiatives to protect and restore ecosystems.

BUSINESS OPERATIONS

REDUCING OUR OPERATING FOOTPRINT

FREEPIK

AN EXEMPLARY APPROACH

As a financial institution, the majority of our emissions are linked to our financing and investment activities. However, in line with our exemplary approach, we are highly focused on reducing emissions related to the environmental operating footprint of our company[1].

FOUR INTERMEDIATE AND QUANTIFIED TARGETS FOR 2030

In line with our Net Zero objectives, we are committed to reducing the environmental impact of our operating footprint to achieve net zero emissions by 2050. To support this commitment, we have defined four quantified medium-term objectives.

Contribute to achieving carbon neutrality by 2050
CARBONE NEUTRALITY

– 50% greenhouse gas emissions linked to Scopes 1 and 2 by 2030 (vs. 2019)
SCOPES 1 AND 2

– 50% greenhouse gas emissions linked to business travel by 2030 (vs. 2019)
BUSINESS TRAVEL

100% renewable electricity in France and internationally by 2030
RENEWABLE ELECTRICITY

Crédit Agricole S.A. is committed to ensuring that its suppliers, covering 40% of its expenses linked to the purchase of goods, services and fixed assets, have set reduction targets based on scientific data by 2027
PROCUREMENT

(1) Throughout this document, the term "operating footprint" refers to the company's carbon footprint excluding its financing, investment and insurance operations.
(2) Based on the GHG Protocol. (3) SBTi (2022). Getting Started Guide for the SBTi Net Zero standard.

METHODOLOGICAL CHOICES

Our objectives for reducing our operational footprint are based on the Group's main emission sources, which includes all our Scope 1 and 2 emissions, as well as business travel (category 6, Scope 3 of the GHG Protocol) and the purchase of goods, services and fixed assets (categories 1 and 2, Scope 3 of the GHG Protocol).

REDUCTION TARGET VALIDATED BY SCIENTIFIC DATA

To promote carbon neutrality by 2050, we have used a rigorous methodology to set objectives for reducing our operational carbon footprint[2], in line with the goal of limiting global warming to 1.5°C between now and 2100. This methodology complies with the recommendations of the Science Based Target initiative (SBTi)[3]. The reduction targets set by Crédit Agricole S.A. and its subsidiaries for their operating footprint are as follows:

Based on scientific data	The objectives specified have been set according to the SBTi recommendations which are based on the 1.5°C scenarios referenced by the Group.
Established using the absolute contraction approach	The absolute contraction approach imposes a linear reduction in absolute emissions for companies in the finance sector for Scopes 1 and 2.
Based on a short-term timeframe	The first reduction targets have been set for 2030.
Established for a broad scope	The selected scope covers 95% of our current Scope 1 and 2 emissions. This includes all emissions from energy consumption and our vehicle fleet. We also have made a voluntary commitment to set targets for business travel.
Targets set at entity level	The Group's reduction target is broken down into objectives for each subsidiary, taking into account the decarbonization level of their respective operating footprints.

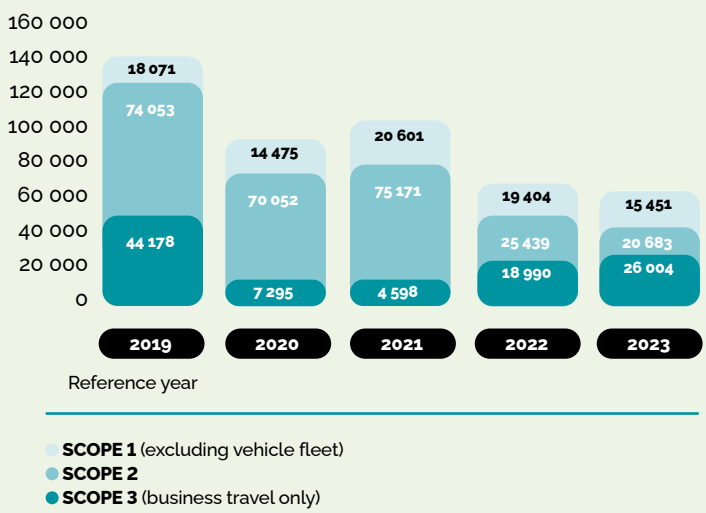
– 50% EMISSIONS BY 2030

According to the SBTi recommendations, which are based on the 1.5°C scenarios referenced by the IPCC, our Scope 1 and 2 emissions must follow a linear reduction trajectory of -4.2% per year in absolute emissions, i.e. an objective of -46.2% by 2030. We have set a more ambitious reduction target for these scopes of -50% by 2030 compared to 2019.
As Crédit Agricole S.A. is strongly dedicated to reducing its environmental impact, we have also made a voluntary commitment to reduce part of our Scope 3 emissions, particularly those linked to business travel, by 50% by 2030 compared to 2019. This target has been set in absolute value and not by FTE (Full-time Equivalent).
By aiming to cut our emissions in half for the selected scope, we have set more ambitious reduction targets than those recommended by the SBTi.
Similarly, we are highly aware of the impact of our value chain on our operating footprint, and have thus committed to ensuring that our suppliers, covering 40% of our expenses linked to the purchase of goods, services and fixed assets, have set reduction objectives based on scientific data by 2027.

THE SITUATION AS OF DECEMBER 31, 2023, CLEAR PROGRESS ON REDUCING EMISSIONS

Between 2016 and 2019, we reduced our operating footprint by over 15% as a result of the work carried out.
Since 2019, our total emissions linked to energy consumption (Scopes 1 and 2) and business travel have fallen by more than 50%. This decrease can be explained both by the impact of the Covid-19 pandemic over the 2020-2021 period, and the Group's efforts to establish new working practices over the long term, particularly for business travel.
This commitment is also reflected in the implementation of our energy sufficiency plan (see section 1-D "Next Steps") and our continued work to supply renewable electricity.

GHG EMISSIONS (in tCO_2e)



A QUANTIFIED TARGET FOR ELECTRIC CARS AND RENEWABLE ELECTRICITY

In line with its objective to reduce its environmental impact, **the Group** has been using 100% renewable electricity for all of its French sites[1] since 2016.

An electrified vehicle fleet

With respect to its Vehicle policy, Crédit Agricole S.A. updated the catalog for its automotive fleet in January 2024 for management and company vehicles, in order to accelerate its shift toward electrification. This catalog contains 50% electric vehicles, 30% plug-in hybrid vehicles (i.e. 80% low-emission vehicles) and 20% non-rechargeable vehicles.
This catalog is regularly updated with the aim of decarbonizing our fleet and integrating new electric vehicles with greater autonomy.

Trains the preferred choice of travel

With regard to **business travel**, for the third year running, the Brussels NGO, Transport and Environment, has commended the travel policy of Crédit Agricole S.A. and its subsidiaries,
in its ranking of the 300 largest companies in the world. The only bank ranked A last year, Crédit Agricole is the only French company that has been recognized for its ambitious GHG reduction objectives this year. Trains are therefore our preferred option for journeys of up to four hours. Lastly, a new reservation tool has been deployed to make travelers more aware of the emissions generated by their travel, from the moment they book their trip.

CONTRIBUTION TO CARBON NEUTRALITY

Throughout the transition period for the Net Zero objective and alongside its actions to reduce emissions, Crédit Agricole is contributing to global carbon neutrality by offsetting part of its residual emissions and financing environmental projects which promote either the reduction of greenhouse gases in the atmosphere or carbon sequestration.
In 2019, Crédit Agricole S.A. and its subsidiaries made a commitment to offset their residual emissions by 2040, for Scopes 1 and 2, as well as business travel, through Livelihoods' funding projects.

FREEPIK

Helping to protect and restore ecosystems

Since the launch of Livelihoods Carbon Funds in 2011, Crédit Agricole has invested more than €12 million in financing for projects focused on climate action, restoring and protecting natural ecosystems, and improving the living conditions of rural communities. The Livelihoods funds are used to finance initiatives relating to reforestation, restoration of degraded ecosystems, agroforestry, regenerative agriculture and small-scale rural energy projects (better stoves) in Africa, Asia, Latin America and, since 2021, in France (Brittany soil project). Following the decision of its Executive Committee in June 2021, Crédit Agricole CIB now offsets 100% of its operating footprint, broken down as follows: a part though Livelihoods, with the balance being offset through the purchase of additional carbon credits.

LIVELIHOODS FUNDS ACT TODAY FOR A BETTER FUTURE

(1) With the exception of one building that has been supplied with renewable electricity since 2022.

Carbioz

The green revolution has taken root with Carbioz, the new platform launched by Crédit Agricole. At a time when carbon footprints are under scrutiny, Carbioz provides an innovative solution for sustainable agriculture. This pioneering initiative aims to encourage farmers to adopt practices recognized by the Low Carbon Label which promote the storage of carbon in soil, an essential process for combatting climate change.

The Low-Carbon Label rewards practical actions taken by the agricultural sector to fight climate change. It identifies, certifies and help finance local projects to reduce greenhouse gas emissions and sequester carbon. It is a government-issued certification which is making a real economic and environmental impact in France for the long term. The resulting carbon credits that are marketed ensure fair remuneration for farmers.

Carbioz is more than an environmental platform; it is bridging the gap between ecological commitments and economic valuation. Farmers who register on Carbioz are recognized and remunerated for their carbon sequestration efforts.
Carbioz thus exemplifies the synergies between ecology and the economy, offering a model of sustainable development that rewards best practices in agriculture. By launching Carbioz, Crédit Agricole has demonstrated its commitment to the environment. This initiative marks a further step towards environmentally-responsible agriculture, while supporting farmers in their transition toward more sustainable practices. Carbioz is more than a platform; it is a commitment to the future, with a green footprint and reduced environmental impact.

NEXT STEPS

NEW PROJECTS TO GO A STEP FURTHER

To reduce our emissions in line with the carbon neutrality objective, we will need to take our previous efforts a step further, by expanding the scope covered. For this reason, several projects have already been implemented to accelerate the transition of Crédit Agricole S.A. and its subsidiaries. To meet our commitment to using 100% renewable electricity across all our sites, we are currently focusing on purchasing renewable electricity with guarantees of origin for our international entities. We are also working to introduce a Power Purchase Agreement (PPA).

ENERGY SUFFICIENCY AT ALL CRÉDIT AGRICOLE SITES IN FRANCE

In September 2022, Crédit Agricole launched an energy sufficiency plan across all of its French sites, which includes the following measures:
- adapting its lighting (changing lighting ranges in common areas and switching off lights in unoccupied buildings; modernizing and continuing to deploy LED lighting);
- aligning room temperatures with those recommended by Ademe: heating of buildings to 19°C and setting air conditioning at 26°C; reducing temperatures to 16°C in buildings that are unoccupied for 48 hours;
- its commitments to optimize energy consumption on its two largest campuses–with a combined surface area of 300,000 m^2 – should lead to a targeted total energy saving of 14% over two years, compared to 2019, broken down as follows: 7% obtained via operational actions, and an additional 7% through the efforts of employees. These efforts to engage employees, initiated in 2022, were stepped up in 2023, with increased participation in the French energy savings championship (CUBE competition organized by the French Institute for Building Energy Performance –IFPEB). With two buildings originally being involved and rewarded, Crédit Agricole S.A. and its subsidiaries expanded this initiative, resulting in a total of twelve buildings taking part in the championship, through a network of 120 volunteer

Evergreen, an ecocampus in Montrouge, home to the Crédit Agricole Group headquarters.

SÉBASTIEN PROUST / CRÉDIT AGRICOLE S.A

ambassadors. Their actions to promote more eco-friendly behavior led to average energy savings of 25% on the two Paris campuses between 2019 and 2023, and saw Crédit Agricole S.A. finish among the top three in the national competition.

TAKING DAILY ACTION

Electrifying commutes

In addition to our commitment to reduce business travel emissions, we are implementing actions to reduce additional Scope 3 emissions relating to our employees commuting habits (Scope 3 category 7). The Group has launched a voluntary policy of electrification for the travel of its employees and customers with the installation of electric charging terminals on sites and at its branches. New mobility plans will be developed to reduce the environmental impact of commuting. We are also aiming to reduce emissions associated with the purchase of goods, services and fixed assets by the Group (categories 1 and 2 of Scope 3) based on the commitment of its suppliers.

Reducing the IT sector's environmental footprint

The Group is taking action to reduce the environmental footprint of its IT system, while striking a balance between technological development, accessibility for all and respect for the environment. Several initiatives have been launched:

- establishment of an environmental accounting system that combines energy sufficiency and eco-efficiency measures;
- promotion of best practice in eco-design and eco-coding to reduce the footprint of our digital services;
- creation of a digital sufficiency culture in terms of infrastructure consumption (physical and virtual);
- implementation of "Carbon Budget by Department" type tools in certain entities to provide practical support in decarbonizing digital services;
- "Responsible Digital Level 2" labels obtained for certain Group entities.

① OIL & GAS

MAXENCE CORDIEZ
Associate Energy and Climate Expert at the Institut Montaigne

“By 2050, we’ll be consuming less energy overall, but using more electricity and low-carbon energy.”

PORTRAIT MADE WITH A.I.- RR

Are we really at a crossroads?

Energy has shaped the world we know today. All the goods and services we enjoy are accessible thanks an abundance of cheap energy. However, we are caught in a double bind, the problem of waste which includes greenhouse gas emissions, and depleting fossil fuels. So, we must find a way to do without fossil fuels, and that requires an overhaul of our energy system.

In your view, what is the future outlook for energy in 2030, 2040 and 2050?

Ideally, we will no longer be using fossil fuels like oil, gas and coal. This will mean saving energy through efficiency and responsible consumption and developing all types of low-carbon energy. In particular, electricity will need to make up a larger share of our energy supply, both in absolute value and proportion. By 2050, we will be more dependent on electricity than we are now for transport and heating, so we will need to develop means of producing low-carbon electricity– through wind, solar, nuclear and hydro power– wherever possible. We will also need to rely more on non-electric low-carbon energy, such as bio- gas, biofuels, synthetic fuels and low-carbon heating. This may come from geothermal or solar thermal energy, nuclear heat, etc. In short, by 2050 we'll be consuming less energy overall, but using more electricity and low-carbon energy.

Will this be enough to solve the problem of limited resources?

All of the Earth's resources are limited. The question that must be asked is what represents the limiting factor. For example, iron ore is a limited resource but it will never be a limiting factor for the economy. It's the exact opposite for oil. This resource is both limited and limiting.

Could you tell us more about your views on nuclear power? Is it still a trump card for our country?

Nuclear power is an essential source of carbon-free energy. But in 2030, the Flamanville reactor will be the only new facility constructed that is capable of producing electricity. The other reactors will not be ready until much later. Nuclear power has a key role to play in meeting the challenge of carbon neutrality. The advantage of nuclear energy is that we can control it. Reactors produce energy when there is no wind and no sun. This is essential for stabilizing the electricity network. However, over the last twenty years, France has lost a lot of its industrial capacity, and nuclear power is first and foremost an industrial project. Procrastinating about nuclear power has held up progress. To make up for lost time, the nuclear sector will need clear and committed support.

You seem very focused on reducing energy consumption and achieving maximum efficiency in energy use?

Responsible energy consumption is not an engineering issue, it's a social issue. Scientists can determine the magnitude of the effort required. However, knowing how to best structure these efforts is a political matter. In France, in which specific areas do we want to focus our efforts? How far are we prepared to go? There needs to be a political and democratic debate on what society considers the most important issues, but it needs to be done in a transparent way. The public needs to have a clear understanding of the problem, and then must engage in democratic debate.

Is the fossil fuel sector putting up resistance?

Some companies, like TotalÉnergies, are diversifying and are aware that their future does not lie in oil. On the other hand, the major corporations in America, who still have considerable potential in the field of unconventional hydrocarbons, such as shale oil, are not on the same wavelength at all. For example, ExxonMobil has not expanded into alternative energies, and remains focused on fossil fuels. Gas companies also see a bright future, because it is "the least bad" fossil fuel for the climate. Gas is not compatible with climate challenges, but it's not as bad as coal, so demand for gas is rising quite sharply. This trend is unlikely to slow down. All the oil and gas producers are strongly positioned in this field. ■

Interview by Jean du Terrail/WE DEMAIN

MAXENCE CORDIEZ
Head of European Public Affairs at the French Alternative Energies and Atomic Energy Commission (CEA).
Author of "Énergies. Fake or not?" (Tana Éditions, 2022).

①

OIL & GAS

ENTITY : CRÉDIT AGRICOLE CIB

Financing granted on a case-by-case basis, depending on the extent of energy companies' commitment to the transition

Limiting global warming to 1.5°C by the end of the century will require that humans significantly and rapidly reduce their dependence on fossil fuels, in particular by developing alternative low-carbon energy. Global greenhouse gas emissions must be cut in half by 2030, with overall hydrocarbon consumption declining as demand falls.

The oil and gas sector has a key role to play in the energy transition:

By meeting the planet's essential energy needs, particularly in developing countries, while at the same time, adopting replacement low-carbon solutions, including low-carbon electrification and energy-efficient alternatives.

By contributing to the energy transition through investment in low-carbon technologies. According to the IEA NetZero scenario, companies in the sector will play an important role in driving development in the low-carbon sector, by drawing on their technical and human expertise in areas related to their traditional activities, whether offshore wind power, biofuels or carbon capture.

A NEW TARGET, WHICH IS TWICE AS AMBITIOUS

Crédit Agricole Group is committed to reducing its financed emissions from the Oil & Gas sector by 30% by 2030, compared to 2020. At the end of 2023, this target was exceeded (–63%), thanks to proactive measures to reduce the exposure of our portfolio, particularly with regard to customers that are not fully committed to the transition.

The Group is now stepping up these efforts, having set a new target of reducing absolute emissions by 75% over the same period, i.e. a rate twice as fast as that predicted by the Net Zero Emissions (NZE) reference scenario, produced by the International Energy Agency(IEA).

As the transition requires a global effort on the part of all players in the sector, the scope covers the entire value chain: integrated players, companies working in exploration and production, pipeline transport, refining, trading and services, etc. Our target is all the more ambitious because it includes CO_2 and methane emissions from oil and gas companies' operations (direct and indirect emissions, covering scope 1 and 2 of the value chain), and those generated during the combustion process by end users downstream (accounting for 80 to 90% of the sector's emissions): engines, boilers, industrial furnaces, etc. (Scope 3 for extraction companies).

ADOPTING A SELECTIVE APPROACH AND SUPPORTING LOW-CARBON ACTIVITIES

In 2022, the Group decided to halt all financing of new oil extraction projects. In 2023, this commitment was extended to all fossil fuels, and we also announced a halt to all corporate financing of independent producers active solely in the exploration and production of oil and natural gas.

We no longer accept placement mandates for bond issues by companies involved in the exploration or production of fossil hydrocarbons, unless they relate to green bonds or sustainability-linked bonds.

We are therefore resolutely focusing our financial resources on low-carbon energy, and we review financing for energy companies on a case-

by-case basis, depending on the extent of their commitment to the transition (reducing the carbon footprint of their traditional operations and adopting high ESG-related standards). We also support them in diversifying into low-carbon energy. This diversification could also benefit other sectors, such as heavy industry (renewable electricity, biofuels, hydrogen, and CO_2 capture and storage technologies, etc.). ■

-35%

Decrease in Crédit Agricole CIB's credit exposure to oil exploration and production between 2020 (USD 7.3 billion) and 2023 (USD 4.7 billion), i.e. a higher percentage than the 2025 target of – 25%.

-63%

REDUCTION IN FINANCED EMISSIONS FROM THE OIL & GAS SECTOR BY CRÉDIT AGRICOLE BETWEEN 2020 (24.3 $MTCO_2E$) AND 2023 (9.1 $MTCO_2E$).

GOAL FOR 2030

-75%

reduction in financed emissions in absolute value

Financed greenhouse gas emissions from Crédit Agricole's Oil & Gas sector must go from 24.3 $MtCO_2e$ in 2020 to 6.1 $MtCO_2e$ en 2030.i

77

million barrels per day (mb/d)

Global oil demand in 2030, modelled in the IEA's Net Zero Emissions by 2050 Scenario, compared to the 103.2 mb/d estimated in 2024. Another IEA scenario (APS - Announced Pledges Scenario), which is based on all governments achieving their energy and climate commitments, forecasts 93 mb/d, while a third, based on current policies and context (STEPS - Stated Policies Scenario), anticipates that demand will plateau at around 100 mb/d. In all cases, demand is expected to peak in 2030, mainly due to the increased use of electricity for transport.

4 159

billion cubic meters (bcm). This represents global gas demand in 2022, according to the International Energy Agency. By 2030, the IEA's NZE scenario estimates a level of 3,403 bcm, compared to 3,861 in the APS scenario, which is based on all governments meeting their climate and energy commitments. The STEPS scenario, based on current policies, forecasts demand at 4,299. All three cases predict that demand for gas and oil will peak in 2030.

② ELECTRICITY PRODUCTION

CHRISTIAN DE PERTHUIS
Founder of the Climate Economics Chair at Paris-Dauphine University

“We must step up the pace in renewable energy development and invest in the electricity grid”

PORTRAIT MADE WITH A.I.

By 2050, France will need to be producing 60% more carbon-free electricity than it does today. Why is this necessary?

We're going to need more electricity for electrification purposes, in three key sectors. Firstly, for transport, which, with the exception of rail, currently runs on oil. In the future, transport will be largely powered by electric, with batteries for cars, and hydrogen used for heavier vehicles. Second, decarbonizing the industrial sector will require its electrification. Arc furnaces are already being used to make recycled steel. In the future, primary steel will be produced using electricity and green hydrogen. The third sector where carbon-free electricity will be needed is hydrogen production.

Where does France stand in terms of carbon-free electricity production?

Our energy mix is one of the most carbon-free, because more than 70% of our electricity comes from nuclear power. No other country in the world can compare to this figure. The problem is that our power plants are aging and we are going to need more and more green electricity. Everywhere else, this means developing renewable energies, and predominantly wind and solar power, for which costs have plummeted in recent years. However, France has fallen behind in its deployment of these sources.

So, what's the next step?

We don't have much time between now and 2040 to ramp up production of green electrons while reducing nuclear power. We will therefore need to extend the operating life of power plants by investing and raising costs. At the same time, we must step up the pace in renewable energy development and invest in the electricity grid to connect these production plants, which are not spread across the country like our 54 reactors. We also need to manage intermittency, which is becoming less of a challenge because of the falling cost of batteries and the capacity of smart grids to absorb peaks in demand. The period between now and 2050 presents a strategic issue: on the one hand, the cost of renewable energy is falling, on the other, nuclear costs are increasing. For me, these conditions suggest that our current gamble on the role of nuclear power from 2050 onwards is a risky one. Electricity could end up being more expensive than if we devote more resources to renewable energy.

How do we ramp up renewable energy development?

Twenty years ago, massive subsidies were required to absorb the extra cost. This is no longer the case. It is more political rather than financial constraints that make the difference. In Europe, the momentum gained by the Green Deal, with its ambitious decarbonization targets, carbon quotas and massive funding, must be maintained after the European elections. At the national level, we must remove the obstacles to developing onshore wind power and photovoltaics, which are no longer finance related, such as legal and administrative restrictions, and issues relating to social acceptability, access to land and protection of the landscape. In terms of offshore wind power, which is still expensive because it is underdeveloped, we must catch up with Northern Europe. Finally, we need to invest more in network infrastructure.

How can we foster a local energy culture in our country?

I think that we need regional low-carbon investment, and cooperatives that connect producers and users. In the future, a greater share of electricity will be produced locally. That said, as with agriculture, we won't achieve energy security through production by individuals. We also need massive centralized capacities to produce green electrons at low cost. It's hard to imagine what future grids will look like, with interconnection between regional, national and international systems.

Globally, renewable energy is on the rise, but we're struggling to reduce fossil fuel use…

The hardest part isn't investing in low-carbon energy but divesting from fossil fuels. This process has already begun with coal in Europe, and more recently in the United States, and it will start happening soon in China, where green energy Is growing at a phenomenal rate. The next step concerns oil and gas, which oil companies call "transition energy". To kick-start this disinvestment, we will also need to curb demand by reducing superfluous consumption. The political challenge is to do this fairly by targeting extravagant lifestyles without penalizing the most disadvantaged groups. ■

Interview by Arthur Hily/WE DEMAIN

CHRISTIAN DE PERTHUIS
Former Director of the Caisse des Dépôts Climate Mission, former lecturer at CNAM, and author of "Carbone Fossile, Carbone Vivant: Vers une Nouvelle Économie du Climat" (Gallimard, 2023)

②

ELECTRICITY PRODUCTION

ENTITIES : CRÉDIT AGRICOLE CIB, CRÉDIT AGRICOLE TRANSITIONS & ÉNERGIES, CRÉDIT AGRICOLE LEASING & FACTORING

"As a leader in renewable energy in France, we aim to support all our customers in reducing energy consumption, and to ramp up our commitment to low-carbon financing in all the countries where we operate"

CHRISTINE DELAMARRE
Deputy Managing Director Crédit Agricole Transitions & Énergies

As the leading private financier of Renewable energies (RE) in France1 and a pioneer in green bond structuring, Crédit Agricole has been committed to the energy transition since 19972. Its mission is to assist small independent producers and major electricity groups with the transition, by supporting low-carbon projects of all types (nuclear, hydraulic, photovoltaic, onshore and offshore wind power), deploying renewable energy solutions for its farming and business customers and gradually withdrawing its support for fossil fuels. Since 2016, the Group has not agreed to finance any new coal power plants. This approach is supported by all of the Group's business lines: banking, insurance, asset management, etc. As electricity is recognized as being the most important vector of the energy transition, there must be an accelerated shift towards low-carbon electricity and a three-fold challenge must be overcome: decarbonizing current generation and facilitating the decarbonization of other sectors, while ensuring the flexibility and stability of the energy system.

THE GROUP BECOMES AN ENERGY PROVIDER FOR REGIONS

By late 2022, electricity production financed by Crédit Agricole already included 60% low-carbon energy, compared to 50% in 2020. The carbon intensity of the electricity mix financed by Crédit Agricole CIB (CACIB) and Crédit Agricole Transitions & Energies (CAT&E), via its Unifergie financing company, in partnership with Crédit Agricole Leasing & Factoring (CAL&F), which together account for more than 90% of GHG emissions financed by the Group in this sector, reached 185 gCO_2e/kWh, i.e. in 2023, half of the corresponding global value in the scenario of the International Energy Agency (IEA) used as a reference (NZE 2050 scenario). With the creation of Crédit Agricole Transitions & Energies, the Group is now a local energy provider for regions, with the aim of driving a competitive and locally-sustainable low-carbon economy.

RENEWABLE ENERGY PRODUCTION, FINANCED IN FRANCE TO INCREASE THREEFOLD BY 2030

Crédit Agricole's 2030 objective of reducing carbon intensity of the financed mix by 58% over ten years is based on three key levers: supporting large corporate clients in the electricity sector in their transition, being more selective and imposing more restrictions when financing gas power plants and continuing the complete phase-out of thermal coal, as announced in 2019, by 2030 in the European Union and OECD countries, and by 2040 in the rest of the world.

This objective is linked to the extended and increased commitments made in 2023: to increase Crédit Agricole CIB's exposure to low-carbon energy by 80% between 2020 and 2025; to triple, via CA T&E, financing in France for renewable energy projects between 2020 and 2030; and to strengthen, via CA T&E, investment capacity for the renewable energy sector by up to €1 billion. ■

(1) Press release 2023 – Crédit Agricole Transitions & Energies unveils its roadmap with the aim of becoming a regional energy company. (2) Press release 2021 – Crédit Agricole CIB Societal Project.

GOAL FOR 2030

-58%

carbon intensity

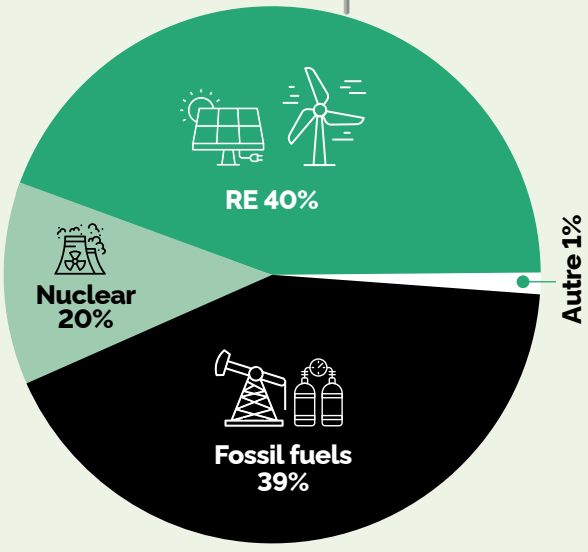
Quantified reduction in the carbon intensity of electricity production financed by Crédit Agricole Group (CACIB and CA T&E via Unifergie, i.e. approximately 80% of financed electricity production) from 224 gCO_2e/kWh in 2020 to 95g in 2030. This trajectory, validated by the 2023 results (-17% compared to 2020) was established based on the IEA's Net Zero scenario. Since then, the IEA scenario has been revised, based on economic and physical realities, with a target of 186 gCO_2e/kWh for 2030 (compared with 138 g initially). If this scenario is deemed more realistic, the trajectory adopted by Crédit Agricole may be reviewed.

25 €BN

MEDIUM AND LONGTERM OUTSTANDINGS, ON BALANCE SHEET AND OFF-BALANCE SHEET TAKEN INTO ACCOUNT IN THE GROUP'S WORK IN 2023.

62 TWh

Production electricity financed by Crédit Agricole in 2022.



60%

Current share of fossil fuels (mainly coal and natural gas) in global electricity production, according to the International Energy Agency.

To achieve the essential and rapid decarbonization of this sector (which accounts for 25 % of global emissions) large-scale development of low-carbon energy, and primarily renewable energy, is needed.

This development must be all the more widescale, given that the share of electricity in final energy consumption is expected to soar between now and 2050. Energy production and storage must meet the needs of sectors that are highly carbon-intensive at present, such as transport, industrial processes, heating systems and hydrogen production.

13.5 GW

Installed capacity in renewable energy production (based on 100% ownership) at the end of 2023, i.e. 4.9 billion at market value close to 5 GW of the share of Crédit Agricole Assurances.

+35%

Increase in renewable energy production financed by Crédit Agricole between 2020 and 2022. At the same time, the increase in global renewable energy production was 14%[3].

13.3 €Bn

Crédit Agricole CIB's low-carbon energy exposure target for 2025, compared to 7.4 billion in 2020 and 10.5 billion in 2022.

2.2 €Bn

Financing of renewable energy projects implemented in 2022 by CAT&E/Unifergie and the Regional Banks.

2 GW

Renewable energy capacity to be installed by 2028 using assets held by Crédit Agricole via Crédit Agricole Transitions & Energies.

(3) World Energy Outlook-IEA.

③&④
RESIDENTIAL AND COMMERCIAL REAL ESTATE

CHRISTINE LECONTE

President of the National Council of the Order of Architects (2021-2024)

“Just like the food industry, the architectural sector must make the shift to local sourcing”

PORTRAIT MADE WITH A.I.
PHOTO : AMÉLIE MARZOUK

Buildings account for 38% of greenhouse gas (GHG) emissions worldwide. What is the situation in France?

It's less: in France, the building sector generates 23% of emissions. But with planetary limits, decarbonization is not the only challenge for the construction sector. There's also the issue of the biodiversity crisis: urban sprawl is having a clear impact on the loss of species. Finally, there is a third crisis relating to raw materials. Too much concrete is being used–a major GHG emitter–and thus too much sand and water, as well as too many limited and precious resources, like copper and zinc. This industry needs a complete overhaul, which is starting to happen slowly .

How far along are we on this journey?

Awareness is already growing: the buildings of 2050 are already here. We need to make better use of what already exists and stop unnecessary demolition. This can be seen from the work being commissioned: 83% of architects are involved in renovation work, which wasn't the case thirty years ago. We need to continue in this vein. The construction industry must change its models, which are focused on constructing new buildings on empty land. New standards are being introduced, particularly for the life cycle of materials. They are pushing the envelope, but not far enough. One reason we're struggling to move away from "100% concrete" is because of a lack of local supply chains for renewable materials. Just like the food industry, the architectural sector must make the shift to local sourcing. The government helps people insulate their homes without considering that this insulation comes from China and is made from petrochemicals. Destandardization is one area of the building economy that is still being overlooked.

How can this method be applied in the field?

By using local materials as they did two hundred years ago, but working with them differently. For example, in Gommegnies, in the North of France, Amélie Fontaine renovated a school using bricks made from compressed raw earth taken from the site. These systems are not suitable for mass roll-out in the style of 20th century capitalism, with as many benefits, but local industries could emerge. In the Jura, there's a lot of wood. If we establish good sawmills and processing plants, we can create a channel via which carpenters can train, and encourage public officials to commission wooden buildings. In the Île-de-France region, Paul-Emmanuel Loiret and Serge Joly came up with the idea of a brick factory that uses excavated earth from the Greater Paris area. This is an era with plenty of creative ideas, but the construction industry is a huge economic sector that is struggling to move with the times.

How can major construction groups evolve?

All professions evolve over the centuries, whether architect, contractor, or artisan. The core function remains the same, but the form changes. We need to understand the state our world is in and rethink our models to meet urgent needs. We're not telling people to stop using concrete, but its use must be limited to the essentials. It's also about seizing opportunities. For example, by recovering material from dismantled buildings. Recovering of this material is an issue for the market. We could then create reuse platforms, develop new professions, etc. We are seeing some initiatives but nothing game-changing.

Many solutions are already available. What else do we need to come up with?

For example, new architectural designs that adapt to extreme heat without air conditioners. The challenge is to limit their use in places where they are not needed on a daily basis, except in hospitals and retirement homes. With an expected 4°C increase, ingenuity will come to the fore by prioritizing biodiversity, resources and emissions.

You mentioned a 4°C increase. Do you think the +2°C trajectory is out of reach?

We need to face facts: we haven't kept to it. And temperature increases are not the same everywhere. In Europe, there has been a higher rise In temperature. We will have to deal with a new environment, with coastal erosion, rising sea levels and drought. There are places where we will no longer be able to live, or will have to live differently, and others that will become more densely populated. It's the end of forty years of urban planning where people lived separately and relied heavily on cars. Covid has changed our relationship with work and our living space. We realized the importance of the outdoors. We no longer want to meet in supermarket parking lots on the outskirts of town. We need quality of life in urban areas. Especially if the climate emergency requires us to rethink our life as a society. ■

Interview by Arthur Hily/WE DEMAIN

CHRISTINE LECONTE
State Consulting Architect for the Regional Directorate of Cultural Affairs (DRAC) Normandy and associate lecturer at ENSA Versailles. Author of "Réparons la Ville, Propositions pour nos Villes et nos Territoires Sylvain Grisot (Éditions Apogée, 2022)

③

RESIDENTIAL REAL ESTATE

ENTITIES : CASSES RÉGIONALES DU CRÉDIT AGRICOLE, LCL

"Leading financial partner of the French people and a major player in real estate, Crédit Agricole supports individuals in accessing more sustainable housing "

VALÉRIE WANQUET
Managing Director Crédit Agricole Immobilier

Mass-scale renovation of current real estate stock while taking into account carbon intensity which varies greatly depending on the region. This is the primary issue with decarbonization of the residential real estate sector, even if, clearly, it also requires constant improvements in the thermal and energy performances of new buildings.
Between 70 and 90% of French housing that will be occupied in 2050 has already been built[1] and the vast majority of these homes must significantly reduce their greenhouse gas emissions. Nearly 40%[2] of current housing, including a third of primary residences, will be affected within the next ten years[3] (Energy performance ratings of E, F and G), or risk the property losing value or being banned from rental.

ACTION REQUIRED FROM ALL STAKEHOLDERS

Effective levers for action already exist today: efficient thermal renovation of existing homes, decarbonization of heat production systems (photovoltaic and thermal solar panels, heat pumps, district heating networks, etc.); and new housing built according to the highest standards.

However, to achieve the set objective, all stakeholders in the sector must be mobilized via a collective and coordinated approach. Firstly, the millions of property owners who need to undertake renovation work, the public authorities, to encourage, facilitate and promote these decisions (simplifying and securing the process for households, financial assistance with priority given to the most vulnerable groups, tax incentives, etc.), the construction industry, to structure the overall work offering (training, specialization, scale-up) while ensuring access to qualified tradespeople and a sufficient supply of materials, and even local stakeholders to deal with specific regional requirements.

THE PROPERTY PURCHASE, A KEY TIME TO ACT

France aims to achieve the 2030 intermediate target defined in the European reference scenario CRREM V1 (Carbon Risk Real Estate Monitor), i.e. reducing average carbon intensity to 12.4 $kgCO_2eq/m^2/year$, compared with the current value of 25, according to Ademe. Crédit Agricole finances one in three homes in the country, and plans to actively contribute to this goal.

The strategy consists of combining different levers to advise customers while supporting government measures, and create a dynamic local renovation supply chain: France Rénov' advisors, local authorities, construction companies, energy performance assessment and audit services, etc.

A system will be put in place for discussions on efficient energy renovation with customers, particularly in the context of the sale or purchase of housing with a poor Energy Performance Diagnosis (DPE). The best time to act is when no one is living in the property! The work will be less expensive, more efficient and will not disrupt the lives of the occupants.

Renovating a property can help reduce energy bills, make it more comfortable in winter and summer, and improve air quality indoors, while increasing the value (green value4 may increase by up to 20%[4] compared to the sale price). Finally, whatever their individual income, everyone can benefit from a zero-interest eco-loan for renovation which, combined with the property purchase loan, reduces the total cost of the loan.

Crédit Agricole also promotes energy-efficient renovation by adapting its credit and pricing policies, and by developing innovative customer solutions. For example, the "J'écorenove Mon Logement" website, (j-ecorenove.credit-agricole.fr)

launched in 2023, issues recommendations and estimates for work associated with improving a property's DPE energy class. In addition to this information, proposals for carrying out DPEs, energy audits, credit offers, etc. are also provided.

Finally, Crédit Agricole must draw on its local network, with its 39 regional banks and LCL, to strengthen local initiatives. Some Regional Banks already have branches specifically for housing and energy. ■

(1) Efficient renovation of housing, Ademe May 2024 https://librairie.ademe.fr/urbanisme-et-batiment/6933-avis-d-expertt-sur-la-renovation-performante-des-logements.htm
(2) Housing stock by energy performance class as of January 1, 2023| Data and statistical studies (developpement-durable.gouv.fr).
(3)Properties considered adequate in 2034 will be class A B C and D.
(4)Green value defines the increase in value generated by improving the energy and environmental performance of a property compared to another, all things being equal and according to notarial baselines.

GOAL FOR 2030

12.4

$kgCO_2e/m^2$/year (European reference scenario CRREM V1)

Crédit Agricole objective: to support property owners in helping to achieve this French objective.
Average carbon intensity of housing financed by Crédit Agricole and LCL in 2020: 22 $kgCO_2e/m^2$/.

4.8 millions(5)

Number of main residences classified, according to the rules of the Energy Performance Diagnosis, (DPE), in categories F or G, out of a stock of 37 million housing units. This represents 15.7% of primary residences. These classes F and G, as well as class E (21.4% of main residences), will gradually be banned from rental by 2034: 2023 for the worst DPE (consumption above 450 kilowatt hours/ m^2/year, approximately 100,000 housing units in the private housing stock), 2025 for all G housing units, 2028 for F housing units, 2034 for E housing units.

3 €Bn(10)

Amount allocated by the State in 2024 to energy renovation as part of the MaPrimeRénov' scheme. According to analyst Xerfi, eliminating poorly insulated buildings could cost €150 billion by 2034.

260,000

Number of acquisition projects financed in 2023 by Crédit Agricole, the leading financial partner of the French people and the top financier of real estate. 77% concerns primary residences, 20% rental properties and 3% secondary residences.

480 TWh(6)

Total final energy consumption of the residential sector (2021), according to the Ministry of Ecological Transition, i.e. 167kWh/M2 on average for primary residences.

+11%(8)

Share of emissions from residential real estate in France in 2020, according to Citepa. This is equivalent to two thirds of the total emissions from the real estate sector, excluding those from construction.

38%

Crédit Agricole's market share in Zero-Interest Eco-loans.

150,000(9)

National objective for the number of large-scale renovation projects in 2024.

(5) The housing stock by energy performance class as of January 1, 2023 | Data and statistical studies (developpement-durable.gouv.fr). (6) https://www.statistiques.developpement-durable.gouv.fr/tableau-de-suivi- de-la-renovation-energetique-dans-le-secteur-residentiel. (7) SDES (2023). Energy renovation monitoring table in the residential sector. (8) CITEPA (2022). Inventory of atmospheric pollutant and greenhouse gas emissions in France - Secten Format (9) https://www.lesechos.fr/politique-societe/societe/immobilier-lobjectif-de-renovations-globales-avec-maprimerenov-revu-a-la-baisse-pour-2024-2079213. (10) https://www.lesechos.fr/politique-societe/societeexclusif-maprimerenov-le-nombre-de-dossiers-en-chute-libre-depuis-janvier-2080960.

④

COMMERCIAL REAL ESTATE

ENTITIES : CRÉDIT AGRICOLE CIB, LCL, CRÉDIT AGRICOLE LEASING & FACTORING, CRÉDIT AGRICOLE ITALIA, CAISSES RÉGIONALES

"Commercial real estate accounts for a significant share of CO_2 emissions, requiring urgent and large-scale decarbonization measures. Banks have a major role to play in supporting this transition."

OLIVIER NICOLAS
Director of Corporate, Institutional and Wealth Management at LCL

According to the AIE[1], commercial real estate accounts for around 20 %[2] of global GHG emissions, a third of which comes exclusively from tertiary buildings. Traditionally supported by banks via the financing of goods or companies (real estate, commercial activities, property development and hotels), this sector has a major role to play in decarbonization. Financial institutions are in a position to encourage their customers to renovate old properties or purchase energy-efficient buildings.

BUILDING USE, THE FIRST CHALLENGE

Decarbonization of a portfolio relies heavily on customers' ability to decarbonize their own activities. The levers for decarbonization are already well-established: bio-based materials, low-consumption construction and renovation techniques, solar panels, heat pumps, etc. In view of this, Crédit Agricole is initially focusing its efforts on building use, which accounts for more than 75% of emissions in this sector[3]. By taking into account emissions of all greenhouse gases (CO_2 and hydrofluorocarbons (HFCs) used in air conditioning), the Group defined a target for 2030, to reduce emission intensity per financial square meter by 40% compared to 2020. This objective is in line with the 2021 Carbon Risk Real Estate Monitor (CRREM) scenario, which aims to limit global warming to 1.5°C. Building use is responsible for the overwhelming majority of direct and indirect emissions (linked to the purchase of energy) from commercial real estate in developed economies.

COMBINING LEVERS FOR ACTION

Crédit Agricole has implemented a strategy to achieve the target set and play a major role in meeting the need for large-scale renovation and low-carbon buildings. It consists of combining various levers for action, with the aim of financing property and companies in the sector, for both current and future customers. This involves promoting, prioritizing and supporting the renovation or acquisition of less energy-intensive buildings, while constantly developing our knowledge of customers' portfolios and monitoring the efforts made for this transition.

It is also about taking advantage of favorable local regulations to boost investment or, in other cases, proposing new offers to ensure commercial operations focus on energy performance (renovation, energy efficiency, etc.) For example, this requires developing all-in-one and turnkey solutions, defining energy selection criteria for new property purchases or construction, or even facilitating access to low-carbon energy (solar power, heat pumps, etc.). Finally, we are stepping up our efforts to establish partnerships with real estate and construction companies to provide our customers with access to high-quality construction and renovation services, which use more environmentally-friendly techniques and materials.

(1) International Energy Agency (2022). Buildings.
(2) Taking into account the use of the building, excluding construction.
(3) CTEPA (2022). Inventory of atmospheric pollutant and greenhouse gas emissions in France - Secten format.

GOAL FOR 2030

-40%

carbon intensity

Crédit Agricole is committed to reducing the average carbon intensity of building use in its commercial real estate portfolio from 36 $kgCO_2e/m^2$/year in 2020 to 22 $kgCO_2e/m^2$/year in 2030. The baseline announced at the Climate Workshop in December 2022 (46 $kgCO_2e/m^2$/year in 2020 for a 2030 target of 27,7 $kgCO_2e/m^2$/year) has been lowered following inclusion in the calculation for the Regional Banks' portfolios which are structurally less carbon-intensive, and to a lesser extent, due to improvements in data quality.

58.4

million tons of CO_2e

Emissions from the building sector in France in 2023 according to the High Council on Climate (Annual Report 2024 – "Keep Heading on Decarbonization, Protect People"), accounting for 16% of national emissions. These emissions are divided between residential buildings (62%) and tertiary buildings (38%).

20%

Share of real estate[4] in global greenhouse gas emissions, according to the International Energy Agency (IEA).

app. 75%

Share of GHG emissions linked to the use of buildings throughout their lifecycle (according to Citepa).

+ €4 billion

Objective for new financing by LCL for energy-efficient buildings between 2023 and 2030..

+50%

Objective to increase financing[5], between 2020 and 2025, of "green buildings[6]" of Crédit Agricole CIB. Buildings defined according to Crédit Agricole's Green Bond Framework.

83.2 €Bn

Medium- and long-term outstandings, off-balance sheet and on-balance sheet taken into account in the Group's building works in 2023.

62%

OF FLOOR SPACE IN THE TERTIARY SECTOR[7] IS HEATED WITH GAS OR FUEL OIL.

(4) Taking into account building use, excluding construction, and 38% if included. (5) Medium- to long-term financing, off-balance sheet and on-balance sheet. (6) Green Bond Framework in force in 2022, date on which the +50% commitment was made. (7) Ministry of Ecological Transition and Territorial Cohesion in 2020.

5 AGRICULTURE

MATTHIEU BRUN
Scientific Director of the Foundation for Agriculture and Rurality in the World (FARM)

“The agricultural transition must be a major societal project”

PORTRAIT MZDE WITH A.I.
PHOTO : CYRIL BITTON / DIVERGENCE

What major challenges does climate change pose for agriculture?

Agriculture is the culprit, victim and solution all rolled into one. The culprit, because it is the second largest source of greenhouse gas emissions after transport, accounting for 20% of emissions. These emissions include methane (especially from livestock), nitrous oxide (from fertilizers) and CO_2 (from energy consumption). At the same time, agriculture is the first victim of climate change. Droughts and flooding are no longer the preserve of the Global South, they are now happening in France and having a major impact on crop yields.

And yet, agriculture is also the solution! It can contribute to carbon storage in biomass and soil. Increasing carbon storage by 0.4% would offset the overall increase in our emissions.

What strategies are available to farmers for achieving carbon neutrality?

The first is agroecology, which involves practices that draw on the functions of living organisms to improve farming. This means using organic fertilizers and nitrogen-fixing legumes and planting trees. It's also about "soil conservation" farming: rather than deeply plowing the soil which releases carbon, soil is covered, crops are diversified and crop rotations are better organized, etc.

The second major challenge is energy. With digital management tools, farmers can now spend less of their time in the field and consume less energy. They can also produce energy using alternatives to fossil fuels, through methanization or bioethanol.

Finally, they can increase their CO_2 storage capacity. Farmers are the guardians of carbon and it must remain in the soil!

How much progress have farmers made on the 2050 objective?

We are seeing some strong trends and increasing innovation. The model is starting to change. Communities have sprung up around practices such as soil conservation, energy production, etc. But farmers remain torn between their growing awareness–they are on the front line after all–and what they need to do to get there. This requires time, support and investment. It's not easy for a farming population that is not getting any younger and which needs to invest in new seeders, management tools, etc.

How will the agricultural landscape change over the next 25 years?

The barrier of regional specialization must be overcome. Regions must rediversify, identify synergies and attract new farmers! As long as the profession pays a fair wage. Finally, we need to help those leaving the profession to do so with dignity and pass on their knowledge. Not only to their children, but also to new entrepreneurs who may have a different vision. Above all, the transition is about more than farms. It concerns the many sectors involved in feeding, clothing and caring for us. Everyone has a role to play in what must be a major societal project. Consumers, by changing their diet and reducing waste. Financiers too, because being part of a transition means taking risks. Farmers, processing companies, bankers and public authorities must all assume these risks to create a profitable circular and bioeconomic model.

How do we take a more global view of this trajectory?

What's the point of France achieving Net Zero if two billion Africans have not? Clearly, this would not achieve our objective. We should be wary of "sovereign decarbonization". We also need to support the trajectories of other countries, particularly those that don't have access to financing and suitable technical solutions. They are bearing the brunt of climate change. We have a role to play in helping emerging countries to break away from the carbon economy because we import the foodstuffs they produce. We must avoid the trap of imported emissions via cheaper but "dirtier" production, including from a social perspective. This will require coordinated planning and investment by public and private actors. ■

Interview by Arthur Hily/WE DEMAIN

MATTHIEU BRUN
Scientific Director of FARM, a foundation recognized as being of public utility which acts for the sustainable development of agriculture around the world, since March 2022. Co- director of the annual publication "Le Démeter" (IRIS éditions) from 2019 to 2022.

5

AGRICULTURE

ENTITIES : CAISSES RÉGIONALES DE CRÉDIT AGRICOLE

"Crédit Agricole has always supported major changes in agriculture. Faced with the dual challenge of food sovereignty and decarbonization, Crédit Agricole is committed to supporting the transition of the agricultural and food sectors."

Jean-Pierre Touzet
Head of Crédit Agricole S.A's Agri-Agro and Development Capital Division.

Agriculture occupies a unique position in the fight against climate change, as both a source of GHGs and a carbon sink. Accounting for nearly a fifth of French emissions, the situation in the agricultural sector is very specific. Most of the greenhouse gases emitted are not CO_2 (from energy consumption of buildings, agricultural machinery, etc.), but methane (CH_4, from enteric fermentation by ruminants and effluent storage), and nitrous oxide (N_2O, from nitrogen fertilizers, livestock effluent and crop residues). These gases are not as well-known as carbon dioxide, but their impact on global warming is much greater, requiring complex carbon assessments for each farm.

This sector is unique because it is the only activity that naturally captures CO_2. Farming and forestry are therefore strategic techniques for storing atmospheric CO_2 in soil and natural ecosystems (grasslands, hedges, forests, etc.). Agriculture is also one of the main casualties of climate change.

A DUAL CLIMATE OBJECTIVE, WITH MULTIPLE CHALLENGES

The agricultural sector is facing the challenge of reconciling productivity and sustainability. It is also faced with the need for food security and competitiveness on international markets, while protecting the rural economy and jobs. Finally, adapting to climate change and transitioning to more resilient forms of agriculture are major challenges for the sector's long-term future. The approach to decarbonization in this sector must take into account the complexity of these different factors while an aging population must be replaced by a new generation of farmers.

In France, the National Low-Carbon Strategy (SNBC), which is currently under review, sets out the roadmap for climate change mitigation. It aims to reduce agricultural emissions by 46% by 2050 and by 18% by 2030 (vs. 2015), and to increase agricultural carbon storage capacity. For several years now, the agricultural sector has been working on reducing greenhouse gas emissions and increasing carbon storage on farms, particularly in soil and hedgerows. As a result of these efforts, the main levers for decarbonizing the sector have been defined: optimization of herd management, increase in protein autonomy; improvement of effluent management and fertilization practices; development of plant cover, legume crops and agroecological practices; and reduction of fossil energy consumption.

ESSENTIAL TOOLS FOR ACTION

As the Bank of 8 out of 10 French farmers, Crédit Agricole has made a commitment to support the agricultural sector in its decarbonization process while strengthening food sovereignty, by supporting the implementation of roadmaps defined by the profession and its supply chains. Crédit Agricole's has already implemented a support plan for individual farms and French Farming as a whole, to help our farmer customers in their transition process, which involves raising awareness among

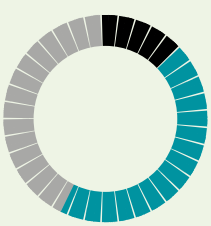
customers and advisors of agricultural challenges and issues, supporting innovation through Village by CA, and developing renewable energy (methanization and solar power). A new tool for advisors of Regional Banks, «Trajectoires Agri», has been developed to raise awareness and provide support to farming customers, focusing on the themes of agricultural transition, climate risks and the development of renewable energy. The Carbioz@ platform, launched in 2024, helps provide structure to the voluntary carbon market by enlisting companies or local authorities that want to contribute to France's overall carbon neutrality, as well as farmers involved in "Low-Carbon Label" decarbonization projects. Specific funds (Fonds de transition Agri-Agro) have also been introduced to promote innovation projects and support the transition of upstream and downstream players in the agricultural sector, with a target amount of €1 billion. ■

19%

Share of French greenhouse gas emissions from agriculture[1].

-18%

Current SNBC reduction target for greenhouse gas emissions from agriculture by 2030 compared to 2015, with a target of –46% by 2050. These emissions are made up of close to 90% methane (CH_4), naturally emitted by livestock, and nitrous oxide (N_2O) associated with crops.



13 %
Carbon dioxide, CO_2

45%
Methane, CH_4

42%
Nitrous oxide, N_2O

(1) CITEPA-SECTEN.
(2) Insee.
(3) Adquation Barometer 2022..

50%[(2)] OF FARMERS WILL HAVE RETIRED WITHIN TEN YEARS.

45€Bn
Outstandings and commercial production recorded on the balance sheet, excluding Crédit Agricole home credit, at the end of 2022, linked to agricultural sector, for €10 billion in annual production.

73% PENETRATION RATE OF CRÉDIT AGRICOLE ON AGRICULTURAL FACILITIES[3].

300 000
Nombre d'exploitations agricoles accompagnées par le Crédit Agricole.

1€Bn

Target amount of Crédit Agricole's Agri-Agro Transition Funds for financing of transition strategies for agricultur and agri-food players, with investment solutions in addition to credit. Three funds were launched in 2023, representing a total of €500 million: Private Equity Fund with Idia (€300 million), Innovation Capital Fund with Supernova Invest (€60 million, target of €100 million), Private Debt Fund with Amundi (€140 million, target of €750 million).

6 AUTOMOTIVE

JEAN-CHARLES PAPAZIAN
Associate Professor of SII Electrical Engineering

“From 2035, sales of thermal cars will be minimal at best”

PORTRAIT MADE WITH A.I. - RR

What is the situation in the automotive industry today?

We are experiencing an industrial revolution on a Darwinian scale. This means that some manufacturers will survive, because they know how to adapt, but others will disappear very quickly. This dynamic has been accelerating for ten years now. I believe the era of the electric car began in 2012-2013 with the release of Zoé and Nissan Leaf by Renault. That was the starting point for the electric car. But the major shift was kickstarted by Tesla.

Could you be more precise?

Without Tesla, we wouldn't be where we are today. This company put everyone's backs against the wall in 2012 by marketing its Model S, a high-end but relatively affordable car that quickly found its market. Tesla changed the game by immediately creating an efficient charging network. From the 2010s onwards, it was possible to cross the United States from east to west and from south to north. In France, we have only had a proper charging network for two years.

From that moment on, the resistance of manufacturers committed to thermal technology was destined to fail. They were forced to accept the idea that their supremacy, and in particular the dominance of German engine manufacturers, was under threat. There was no longer any point in trying to put the brakes on the transition to the electric car, they would have to take on their competitors. However, Europeans do not have a total advantage. At the time, they were way behind in battery technology, for example.

Do you think the thermal engine has a future?

No, I don't. From 2035, sales of thermal cars will be minimal at best. Thermal technology has reached a highly sophisticated level. But trying to adapt thermal engines to anti-pollution standards has made them extremely complex to manufacture. They have become less reliable. Customers experience repeated breakdowns, while at the same time, electric propulsion continues to improve. Thermal vehicles don't stand a chance. Today, the automotive industry is in the same situation as photographic equipment manufacturers were thirty years ago, with the shift from film to digital photos.

Hasn't the transition to electric cars simply changed our relationship with cars?

Owning a car is becoming increasingly difficult. The cost of purchasing, insuring and running a car continues to rise. City centers are almost sealed off from cars. A significant proportion of young people have therefore given up on getting their driving license. But despite everything, the car remains a symbol of freedom and an essential tool for the autonomy of individuals and families. Furthermore, two trends are emerging in our society: a distrust of the "collective" and a focus on the "individual". With continued urban sprawl, all the conditions are in place for private cars to remain an integral part of our lifestyles.

So, is the automotive industry still worth investing in?

That's a tough question. I'd say that investing in this sector, in light of the current situation, would be very risky. It's undergoing major disruption. When this period is over, there will be losers. There's no doubt about it. French manufacturers are not in the best position. They are caught between Tesla, which is very efficient, industrially speaking, and Chinese manufacturers, which are adept at making very good, inexpensive cars. Europeans will have to find their niche and it won't be easy. Furthermore, no one seriously believes anymore that we are going to be able to develop our automobile industry by sheltering it behind a defensive blockade of tax and customs. We will need to take on fierce competition by offering good, very well-made products at the best price. Certain parts of the market might not shrink, but only the best manufacturers will thrive within these sectors. ■

Interview by Jean du Terrail/WE DEMAIN

JEAN-CHARLES PAPAZIAN
Consultant in technical and legal support training for automotive professionals. Professor of BTS Vehicle Maintenance in Guadeloupe

6

AUTOMOTIVE

ENTITIES : CRÉDIT AGRICOLE CIB, CRÉDIT AGRICOLE PERSONAL FINANCE & MOBILITY, CRÉDIT AGRICOLE LEASING & FACTORING

"Crédit Agricole wants to lead the decarbonization of the mobility sector by supporting the electrification of vehicles with both car manufacturers and drivers"

RICHARD BOULIGNY
Deputy CEO of the CAPFM-Group (formerly CACF) for Mobility

TODOR TODOROSVKI, Global Head of he Automotive Sector, Crédit Agricole

Representing almost half of global CO_2 emissions from the transport sector (3.53 billion tons in 2022 out of nearly 8 billion, according to the International Energy Agency), the automotive sector is critical in terms of environmental issues, like global warming and air pollution, etc. In Europe, regulations are gradually becoming aligned with the decarbonization of the automotive sector (for example, the CAFE program and EU Fit for 55). The main strategy for decarbonization involves electrification of the vehicle fleet, especially since fuel combustion now accounts for 70%[1] of the sector's greenhouse gas emissions. In addition, current and future societal developments are driving this change: modal shift to lower-emitting soft mobilities, such as public transport, bicycles, carpooling, etc.

SUPPORTING MANUFACTURERS, ENCOURAGING USERS

The Crédit Agricole Group has set itself the objective of reducing the average carbon intensity of actual tailpipe emissions[2] from new light vehicles by 50% between 2020 and 2030. This target currently covers the scope of company[3] and vehicle[4] financing, i.e. including financing of automobile manufacturers, as well as loans for private and professional vehicles. The current focus is light vehicles. The next step will be to include heavy vehicles and take into account the significant future increase in the share of emissions from the production of electric vehicle batteries (around 30% of greenhouse gas emissions from the automotive value chain in 2030). By following this line of action, Crédit Agricole is supporting manufacturers of cleaner vehicles in the sector, particularly electric vehicles, directing investment to this field, and introducing new types of financing to encourage individuals and professionals to opt for these vehicles.

ACTIONS FOR LOW-CARBON MOBILITY

Reducing the carbon footprint of Crédit Agricole Personal Finance & Mobility's (CAPFM) automotive outstandings will mainly be achieved through the CAFE tax applied to manufacturers (-35%). In addition, CAPFM offers targeted financing for manufacturers of lower-emission vehicles. New agreements will be put in place with manufacturers of exclusively electric vehicles, along with "green" rentals for any duration, etc. CAPFM's aim is that from 2025, one in two of new vehicles financed will be 100% electric or hybrid; and one in three of new vehicles financed will be 100% electric.

For its part, Crédit Agricole Leasing & Factoring (CALF) is stepping up its efforts and plans to optimize the offers and distribution routes for low-carbon mobility. This has resulted in the provision, in the LeaseNet sales process, for services and insurance for Electric Vehicle use, optimized Residual Value, and finally an infographic on purchasing support to assist and provide a visual aid for bank advisors. The Crédit Agricole action plan also contains measures for monitoring manufacturers' emission trajectories, and financing new businesses: battery manufacturers, charging solution operators, etc. Crédit Agricole will draw on its regional network to support the development of charging stations, so that every individual can drive an electric car under the best possible conditions, whatever region they may be in. ■

(1) Argonne National Laboratory (2020) (2) Real-world fuel use TTW, terme utilisé par l'ICCT et l'Environmental Protection Agency. (3) Bilan et hors bilan, moyen et long termes. (4) Prêts particuliers, leasing, titrisation.

GOAL FOR 2030

-50%

carbone intensity

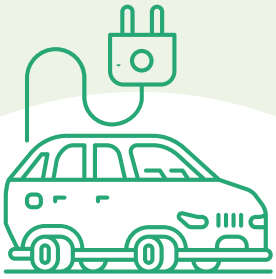
The carbon intensity of Crédit Agricole's automotive financing portfolio must be reduced from 190 to 95 gCO_2/km between 2020 and 2030. This aim is more ambitious than the target in the Net Zero scenario of the International Energy Agency (– 46%), used as a reference. The calculation of these emissions takes into account manufacturing tests and increases to correct discrepancies with actual emissions (reported by the International Council on Clean Transportation, ICCT).

12%

Share of global greenhouse gas emissions from the automotive sector, according to the International Energy Agency,

25%

Overall share of the transport sector.



1,018,605

Number of 100% electric vehicles registered in France's rolling stock at the end of 2023, according to the National Association for Development of Electric Mobility (Avere), i.e. an increase of 49.5% compared to 2022, and more than double the amount in 2021. 328,512 private and utility electric vehicles were registered in total in one year.

Market share : close to 20%

130 million tons of CO_2e

Greenhouse gas emissions (predominantly CO_2 from fuel combustion) from the transport sector in France in 2022, according to data from Citepa, i.e. 32% of national emissions. Transport is the only sector whose emissions have not fallen since 1990. Road transport accounts for approximately 94% of these emissions, according to the General Commission for Sustainable Development, including more than half for private vehicles and 20% for light commercial vehicles.

52,9 €Bn

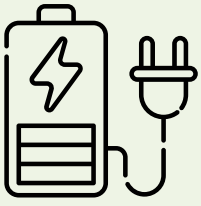
Medium and long-term outstandings, balance sheet and off-balance sheet taken into account in the Group's work in 2023.

-13%

Decrease in the carbon intensity of emissions from Crédit Agricole's automotive financing portfolio in 2023, compared to 2020.

80 to 90 million

Number of new light vehicles sold worldwide each year, according to data from MarkLines, an automotive industry portal.
Share of electric vehicles: close to 13% in 2022.



127,287

NUMBER OF CHARGING POINTS OPEN TO THE PUBLIC IN FRANCE AS OF MARCH 31, 2024.

ACCORDING TO AVERE

7 AVIATION

GILLES ROSENBERGER
Aeronautical Engineer and Founder of Neofuel

“Manufacturers already accept that 50% of the fuel consumed must be Sustainable Aviation Fuel”

PORTRAIT MADE WITH A.I.
ASTRID LAGOUGINE / HANS LUCAS

COP21 made a commitment to reduce the carbon footprint of commercial air transport to zero by 2050. How can we keep this amazing promise?

Our experience with Covid has shown that, after the collapse in air traffic, two years on, the sector is almost back to the 2019 level, with close to 4.3 billion passengers, and more than 37 million flights in 2023. Order books are rapidly filling up, with 15,000 aircraft due to be delivered! A "Net-Zero emissions" objective has been set for 2050, leaving thirty-five years to mobilize the aviation sector. Unfortunately, the two key factors for achieving this target have been overlooked: the laws of physics and those of economics. We cannot disregard the decades of work that, over the past seventy years, have led to unprecedented progress in reducing fossil fuel consumption, gas and particle emissions, noise pollution and also prices, making air transport accessible to even low-income groups. There has been a rebound effect resulting in an increase in flights and, therefore, CO_2 emissions. Since 2015, laboratories, design offices and start-ups have been operating at full capacity. Administrations, spurred on by political leaders, have been promoting and helping to finance these projects.

GILLES ROSENBERGER
Former operations director of Voltair (Airbus subsidiary for the E-Fan), expert with the BPI

Are these efforts enough?

Yes and no. Yes, because progress is being made through research. No, because humans cannot necessarily bend the laws of physics or economics to suit their will. Experience has shown that progress, and, therefore, research, sometimes takes a long time. The sole example of batteries, which have been worked on for over one hundred and fifty years, illustrates that certain things are impossible and that some results do not live up to expectations. Who remembers that the Jamais-Contente, the first car to reach the staggering speed of 100km/h in 1900, was an electric car? It had no future at the time, until now when the electric car is making a comeback. Today, while we can certify a two-seater aircraft for a one-hour flight, the progress required to increase these values depends on the quantity of onboard energy (energy density) and the reliability of the cells (and, in particular, their resistance to thermal runaway). We can only hope to make gradual and limited advances with lithium-ion technologies, with an estimated gain of 50% over five years at best. In this industry, future visibility is around ten years. We can thus envision low-capacity aircraft (carrying up to 9 passengers) travelling over short distances of up to 200 kilometers.

What are our options?

First option: less flights. Reducing our use of air transport by opting for land or sea transport instead, considered more eco-friendly, would help decarbonize travel. Apparently, the results wouldn't be staggering, not to mention the effects on the aviation economy. Another idea is to encourage the aviation sector to take a leap forward. Either with conventional aviation, by making progressive advances, in successive stages over the next twenty-five years. There is still a lot of potential for conventional aviation to meet the objectives. Or, with a new form of aviation, by applying groundbreaking technology to create fundamentally different aircraft. This form of air travel must be invented, and will require research in, among other things, hydrogen and fuel cells, while nearly 2,000 new aircraft come off the production lines each year, with a probable lifespan of thirty to forty years!

Can new non-fossil fuels pick up the slack?

Engine manufacturers are making turbojets that run on new fuels of non-fossil origin, like SAF or Sustainable Aviation Fuel, which produces 80% less emissions than the kerosene fuels currently in use. Regulations are already in place. From now on in Europe, the fuels delivered to companies at airports must include 2% SAF. This minimum amount will increase, reaching 100% by 2035. This will already represent a major step forward. In the meantime, engine manufacturers already accept that 50% of the fuel consumed must be SAF and are committed to ensuring that, by 2030, this will be 100%. The stumbling block which is delaying this authorization is the aromatic compounds contained in oil which help ensure that engines function properly. ■

Interview by Michel Polacco/WE DEMAIN

7

AVIATION

ENTITY : CRÉDIT AGRICOLE CIB

"Helping our customers finance their new-technology aircraft and supporting them in the development of sustainable fuels"

JOSÉ ABRAMOVICI
Global Head of the Aviation sector, Crédit Agricole CIB

-25% reduction in carbon intensity per "Revenue Ton-Kilometer[1]" between 2019 and 2030, taking into account emissions linked to fuel production. This is Crédit Agricole's 2030 decarbonization objective for its Aviation portfolio. It is based on two years of research by the ACAF working group (Aviation Climate-Aligned Finance Working Group – which gave rise to the Pegasus Guidelines), bringing together banks financing the aviation sector, and supported by the Rocky Mountain Institute through its Center for Climate Aligned Finance, an American center for energy research.

The aim of this work is to establish a common framework for measuring financed emissions and then comparing them to a reference trajectory, in line with the 1.5°C objective and the Net Zero 2050 commitment made by the aviation sector.

This ambitious target of a 25% reduction in carbon intensity in this high-stakes sector is dependent on three key levers.

According to current expectations, traffic will increase over the long term, while disruptive technologies are still in their infancy.

CACIB'S FIRST LEVER: PRIORITY GIVEN TO THE MOST EFFICIENT AIRCRAFT

Firstly, Crédit Agricole is prioritizing financing for "fourth-generation" aircraft. These aircraft, of the type A220/A320neo/Boeing Max or B787/A350/A330neo, consume 20 to 25% less fuel than their predecessors. However, kerosene combustion generates 99% of the sector's Scope 1 emissions. In 2030, these aircraft should account for 90% of Crédit Agricole's financing commitments, compared to 33% in 2019.

In the longer term, developing technologies, batteries and electricity for small planes, and hydrogen for short- and medium-haul flights, will allow us to take decarbonization a step further. These are all long-term developments that Crédit Agricole is supporting by working as closely with its customers as possible.

SECOND LEVER: A SHIFT TO FUELS THAT EMIT LESS CARBON DURING THEIR LIFE CYCLE

Sustainable Aviation Fuel, or SAF, is fuel made from agricultural biomass, forestry residues, used oils or even algae and yeast. These fuels, still produced in limited quantities today, offer the benefit of an average carbon footprint that is 80% lower than kerosene over their life cycle.

As a member of the Renewable and Low-Carbon Fuel Alliance working group, sponsored by the European Commission, Crédit Agricole is involved in the value chain of these new fuels. For 2030, it has included an assumption in its decarbonization objective that the fuel used will contain 6% SAF, i.e. the rate required by the EU legislation, "ReFuelEU Aviation".

Finally, e-fuels, made from a combination of low-carbon hydrogen produced by electrolysis of water and CO_2 captured in the atmosphere or via industrial processes (cement manufacturing, for example) offer another form of fuel for the future that is still in development.

THIRD LEVER: OPTIMIZING AIRLINE OPERATIONS

Air traffic management is expected to become more efficient in the coming years. In addition, airlines are working to improve their operational procedures, both on the ground and in the air: optimization of take-off, approach and flight paths, eco-piloting, electric taxiing, reduced congestion at airports, etc. ■

(1) Intensity indicator: gCO2e/'Revenue-Ton-Km' including passenger and cargo traffic (bellyhold and dedicated cargo).

GOAL FOR 2030

-25%

carbon intensity

The carbon intensity of Crédit Agricole's portfolio will thus need to be reduced to 750 gCO_2e per revenue ton-kilometer (RTK), including upstream emissions linked to kerosene production.

800 $MtCO_2$

Estimated global emissions from the aviation sector in 2022 according to the IEA, or around 80% of the pre-pandemic level. In France, they were estimated at around 16 million tons for the same year, including international transport. According to data from the International Council on Clean Transportation (ICCT), these emissions increased by 33% between 2013 and 2019. They then fell due to the Covid crisis.

+3 % FORECAST ANNUAL GROWTH IN GLOBAL AIR TRAFFIC FROM 2024.

90%

Objective for fourth- generation planes in the Crédit Agricole portfolio by 2030. This figure is currently around 60%, which is already a higher proportion than in the worldwide fleet.

8,9 €Bn

Medium- and long-term commitments, on- and off-balance sheet taken into account in the Group's work in 2023, with no less than 800 aircraft financed.

3%

Share of global energy-related greenhouse gas emissions from the aviation sector in 2019, according to the International Energy Agency (IEA), i.e. 13% of transport emissions. The same year, this sector (national and international air transport) accounted for 6.8% of CO_2 emissions. in France, according to Citepa, i.e. 15.6% of CO_2 transport emissions.

8 SHIPPING

ERWAN JACQUIN
Engineer and Co-founder of the Meet2050 Institute

“The IMO wants shipping to be completely decarbonized by 2050”

PORTRAIT MADE WITH A.I.
SIDNEY LÉA LE BOUR / HANS LUCAS

The International Maritime Organization (IMO) wants shipping to be completely decarbonized by 2050. This is an incredibly ambitious goal, given that 85 to 90% of international trade passes through the oceans. There is no reason to think that this percentage will decrease, barring a sudden drop in global trade.

Today, the energy from fossil fuels consumed by all the ships in circulation is around 3.5 terawatts per hour. Substituting this phenomenal amount of energy through hydrogen or biofuels, which would have to be produced and no longer extracted, would require 900 nuclear reactors, across the entire planet, dedicated to the manufacture of less polluting fuels, just for shipping. However, there are only 400 nuclear reactors currently in operation in the world today. In France, if we wanted to decarbonize our shipping fleet by completely renouncing fossil fuels, we would need to build 7 nuclear reactors for the shipping sector.

ERWAN JACQUIN
Former Véritas Manager – Marine Engineering and former Director of Research and Development at CGA/CGM, co-founder of the Meet2050 Institute

To achieve total decarbonization of this sector, which is the backbone of the global economy, trade-offs will have to be made. But these choices are very complex. For example, greenhouse gas emissions from boats could be halved if their speed was reduced by half. But that means receiving half as many raw materials over a given period, producing half as many finished products and consuming half as much energy. Is this really feasible?

WIND, A PROMISING AREA FOR RESEARCH AND DEVELOPMENT

It would be impossible to electrify the world's commercial fleet: ships simply could not recharge their batteries in the middle of the ocean. Despite this, the decarbonization objective for 2050 can be achieved. Success will require major research and development. And we would have to agree to drop solutions that are not best suited to the shipping sector. This is the case with offshore wind power, for example. Taking into account all the energy losses accumulated between the moment wind energy is captured and the time when it is used to propel ships in the form of hydrogen or manufactured biofuels, efficiency is only 5 to 10%. However, wind remains one of the most promising avenues for decarbonizing the shipping sector by 2050, provided that this energy is captured and used directly by physical on-board systems. Michelin is working on an inflatable sail prototype and Airbus is also working in this field. And behind these large companies, start-ups are innovating in this sector. Reintroducing sails on ships would also save on infrastructure costs. The money not spent on building wind turbines, factories and additional docks, could be invested elsewhere. However, this technology is in its infancy. Of the 110,000 ships in operation, only around twenty are equipped with sails. We must therefore explore other avenues for ships that cannot be fitted with sails.

SOLUTIONS ADAPTED TO EACH FLEET SEGMENT

This presents a real conundrum, as suitable solutions must be found for each fleet segment. However, there are certain measures that can be applied to all types of ships. Firstly, we need to make ships as energy-efficient as possible. Improvements can still be made in thruster performance. We can redesign the shape of hulls and achieve optimum engine efficiency. In the years to come, and even if ships are already very efficient, we could make fuel savings of around 10 to 15%. We could save another 15% by increasing the operational efficiency of fleets. How can we best use these optimized boats? By training sailors or optimizing ship routes. Removing fouling from the hull which weighs down ships is an area that should not be overlooked. Operational efficiency can improve energy efficiency by another 10 to 15%. In addition, we could use biofuels and, lastly, we could adopt more responsible consumption practices. The objectives set by the IMO will be achieved through a wide range of solutions. We must continue our efforts in research and development. ■

Interview by Jean du Terrail/WE DEMAIN

8

SHIPPING

ENTITY : CRÉDIT AGRICOLE CIB

"As a founding member of the Poseidon Principles, Crédit Agricole is supporting its shipping customers to decarbonize the shipping sector, with an ambitious and realistic trajectory"

THIBAUD ESCOFFIER Global Head of Shipping. Finance Crédit Agricole CIB

An essential cog in international trade, and thus the global economy, in 2023, the shipping sector was found to generate approximately 2% of global greenhouse gas emissions each year, according to Clarksons Research. It is also one of the most complex sectors in terms of rapid decarbonization. The vast majority of ships today have engines that run on fossil fuels, and mainly heavy fuel oil. For container ships, speed, and thus fuel consumption, has an impact on transport work capacity. Alternative "green" fuels are still in the early stages and are not suitable for older ships. What's more, modernizing the shipping fleet with new propulsion technologies is only feasible over the long term, to avoid disruption to tonnage supply.

THE POSEIDON PRINCIPLES AND THE 1.5°C INITIATIVE

In light of this situation, in 2019, Crédit Agricole CIB–one of the world's leading shipping banks –co-founded, together with other financial institutions, the Poseidon Principles, a global framework for assessing and disclosing the climate alignment of ship finance portfolios. This framework is consistent with the policies of the IMO, which has set a decarbonization trajectory aiming at close to net-zero by 2050. A group of ten banks, led by Crédit Agricole, have also established the 1.5°C Initiative for Shipping, in order to build NZBA-aligned trajectories.

RENOVATING OR REPLACING SHIPS, AS WELL AS REDUCING SPEED

Developed with the independent expert firm, DNV Maritime Advisory, these trajectories are based on three levers. First, by retrofits: converting engines so they can run on "greener" fuels; bow retrofits; installing rotating sails and on-board carbon capture systems, etc. Second, by gradually reducing their speed, according to the specific characteristics of each ship. Lastly, by building new low-carbon ships, scrapping older vessels and ramping up the development of new fuels, particularly methanol (low-carbon hydrogen + CO_2) and ammonia (low-carbon hydrogen + nitrogen).

Crédit Agricole's objective of reducing the carbon intensity of the cargo ships it finances by 36% is based on these levers. It also takes into account the European target to reduce shipping emissions by 6% between now and 2030.

WORKING ON A SHIP-BY-SHIP BASIS

To achieve its objective, Crédit Agricole Group has already started working with its customers on a ship-by-ship basis, particularly when refinancing traditional vessels. Each ship will be given a carbon score. The Bank's support will be conditional on the cargo ship retrofit plan where possible. An active policy will also be established to finance the construction of ships that run on increasingly lower-emitting fuels (biofuel, LNG, followed by methanol and ammonia), in order to support shipping companies in upgrading their fleet, and to speed up the process of decommissioning the highest-emitting ships. ■

GOAL FOR 2030

-36%

in carbon intensity of cargo ships

The carbon intensity of the freight ship portfolio financed by Crédit Agricole (cargo shipping) must be reduced to 3.98 gCo_2e per maximum transportable tonnage per nautical mile (taking into account emissions linked to fuel production) compared to 6.22 in 2020. Passenger vessels (23% of the Crédit Agricole CIB portfolio) will be included in this decarbonization process when the IMO adopts a relevant methodology to assess their carbon intensity.

+ 80%(1)

Share of maritime transport in the global trade of goods. This amounted to 11 billion tons in 2018, according to UNCTAD (United Nations Conference on Trade and Development).

1,800

MAXIMUM GLOBAL SHIPYARD CONSTRUCTION CAPACITY, MAINLY IN SOUTH KOREA, CHINA AND JAPAN.

(1) CNUCED - Shipping Review 2023, https://unctad.org/fr/ publication/ etude-sur-le-transport-maritime-2023.

Between 600 and 1,100 million tons of CO_2

Estimates of average annual CO_2 emissions from the shipping sector over the past decade, according to the IPCC. These estimates vary depending on the data and calculation methods used, with the value of 800 $MtCO_2$ often being applied. This value has been steadily increasing in recent decades, with the shipping sector having grown by 250% in forty years. However, an improvement in the carbon intensity of ships has been recorded for around ten years.

80%

Market share of shipping of the 35 banks and export credit agencies that have now adopted the Poseidon Principles.

1,200

Number of vessels financed by Crédit Agricole CIB at the end of 2022, from a fleet of 65,000 vessels on the marke (around $1.3 trillion in value).

€5,7 Bn

Medium and long-term outstandings, balance sheet taken into account in the Group's work in 2022.

$2,400Bn

Estimated transition cost for the shipping sector, including 1,700 allocated to development and deployment of alternative fuels, according to the Boston Consulting Group.

9 CEMENT

KAREN SCRIVENER
Materials Chemist,
Federal Polytechnic School of Lausanne (EPFL)

“With existing technologies, we could reduce emissions linked to concrete production by 80%”

PORTRAIT MADE WITH A.I. - RR

Cement is the most widely used material on the planet, ahead of steel and plastic. We produce 4.1 billion tons each year, which is why it has such a major impact on the environment. This sector, which is essential to development, generates 8% of all GHG emissions. However, concrete production does not generate CO_2 by definition. This process can thus be adapted to meet the most ambitious decarbonization targets. Solutions have already emerged, while others still need to be developed, to reduce the sector's impact on global warming. This is good news. Realistically, cement cannot be replaced with another material. For example, wood is only used in 10% of construction work and this is not likely to increase in the future. In addition, various studies have highlighted the poor environmental record of the timber industry, largely due to the practice of clear-cutting.

Therefore, concrete will continue to be an essential material and be used in very large quantities. All the research conducted has led to the same conclusion: with existing technologies, we could reduce emission costs linked to concrete production by 70 to 80%.

KAREN SCRIVENER
Director of the construction materials laboratory and professor at EPFL since 2001. Expert in LC3, sustainable cement with calcined clays and limestone

THE MARKET WILL RELOCATE TO INDIA AND AFRICA

Emissions could be reduced by 30 to 40% by replacing limestone with other ingredients, such as calcined clays, for example, to make cement. Equivalent additional gains could be made by changing concrete manufacturing processes to reduce greenhouse gases. Finally, a further 30% could be saved by limiting the materials used to construct buildings, while ensuring full compliance with safety standards.

These cumulative gains would lead to a huge reduction in emissions of at least 50% by 2030 according to my estimates. This is very reassuring, because we must also bear in mind that there is no other material as efficient as concrete that can be produced at the same price and in equivalent quantities.

Mass production and use of concrete will continue but there will be a shift in the market. Until the 1960s, Europe, Japan and North America used 80 to 90% of the cement and concrete produced. In the 1980s, there was a major transition when China became the biggest producer and user of these materials. On average, each Chinese citizen now uses 1.5 tons per year, while the global average is 500 kilos. But in the next thirty years, Africa and India will overtake China. Africa's population will double by 2050 and there will be a major need for housing, roads and infrastructure.

BEWARE OF HOSTILE LOBBYING

It is essential that this demand is met by producers who had made a commitment to reduce their GHG emissions, long before demand exploded. However, it's not only manufacturers that need to make these efforts. For example, the competent authorities must stop setting standards which increase the quantity of material used by 10%, that go overboard in protecting the public from the risk of building collapse, which can be prevented simply by using exactly the right amount of cement and concrete. Using ten percent more product for no good reason means ten percent more greenhouse gases in the atmosphere that could have been avoided. Architects can play a role by adapting building designs to the geological and climatic conditions of the environment in which they are operating.

Contrary to popular belief, the cement and concrete industry is one of the sectors that will achieve mass decarbonization the fastest. The main players, and especially the producers, are aware of the issues and have started making the necessary efforts. The risk is that, faced with hostile lobbying campaigns, manufacturers will seek to sell off their production facilities, particularly in Africa, to companies that are less concerned about continuing the decarbonization process they have started. ■

Interview by Jean du Terrail/WE DEMAIN

9

CEMENT

ENTITY : CRÉDIT AGRICOLE CIB

"We aim to encourage our cement producing customers to set ambitious decarbonization targets and to support them in implementing their respective strategies"

ELENA BURDYKINA
Executive Director , Sustainable Banking, Crédit Agricole CIB

The production of cement is an emission-intensive activity, because it involves heating limestone and clay to 1,450°C to produce clinker–the hydraulic active substance in cement–by decarbonization. The clinker is then mixed with other components to produce cement. In this industrial chain, which is one of the highest-emitting, CO_2 is generated during the process of chemical decarbonization (at 2/3), firing (mainly using fossil fuels and non-biomass waste), and mixing of materials.

To decarbonize their operations, manufacturers are working to improve the energy efficiency of their sites, replace fuels fossil fuels with other sources of energy, and reduce the proportion of clinker in cement (clinker-to-cement ratio), etc.

A MORE COMPREHENSIVE CALCULATION FOR CARBON INTENSITY

In its Net Zero by 2050 scenario, the International Energy Agency suggests that the main levers for reducing carbon intensity by 2030 will be lowering the clinker-to-cement ratio and using alternative fuels. In addition to electrifying kilns and using hydrogen, "Carbon Capture, Utilization and Storage" (CCUS) should account for most of the reduction in emissions (around 55% between 2020 and 2050[1]). Manufacturers, often focused solely on their direct emissions (representing the largest share), need to make stronger commitments in this area. Crédit Agricole is committed to supporting its cement-producing customers in decarbonizing their operations. In order to provide a more comprehensive assessment in line with the highest recommended standards, it has extended its strategy to cover direct and indirect emissions[2] (associated with purchased energy) from the manufacture of clinker and cement, including emissions from non-renewable alternative fuels, such as plastics. In total, 90% of the sector's emissions are covered by our scope, while concrete production (10%) is currently excluded.

SUPPORTING MAJOR FINANCING NEEDS

This requirement for a more comprehensive view has increased the value of carbon intensity financed by the Group, compared to that reported by its counterparts. It demonstrates Crédit Agricole's aim to be transparent in supporting its customers, to encourage them to set ambitious decarbonization targets and to promote other means of decarbonization than increased use of alternative fuels.

On this basis, the objective of reducing the carbon intensity of emissions financed by the Group by at least 20% by 2030 compared to 2020 will be revised in 2025, to match the objectives of its cement-producing customers. Direct dialogue with its customers on this matter is ongoing. Crédit Agricole is thus committed to supporting their significant financing needs in terms of substituting clinker, reducing their use of fossil fuels, improving energy efficiency and developing CO_2 capture technologies. The portfolio of Crédit Agricole CIB will be managed according to each individual company's carbon intensity, and will be reallocated to prioritize the most efficient cement manufacturers with the most ambitious targets. ■

(1) AIE, Net Zéro RODMAP-2023 Update.
(2) Scopes 1 and 2.

GOAL FOR 2030

20%

minimum raw emission intensity (for Scopes 1 and 2)

Emissions from cement production financed by Crédit Agricole CIB must be reduced from 671 $kgCO_2e$ per ton of cementitious material in 2020, to 537 $kgCO_2e$ in 2030. These emissions include all emissions linked to the production of clinker and cement. Cementitious material refers to the total volume of clinker produced and the volume of additives required for cement production. This metric, defined by the Global Cement and Concrete Association (GCCA), is used to compare manufacturers' emissions. It is subject to change, just like the decarbonization trajectory, as progress is made on the reference scenarios and as more data becomes available.

4

billion tons

Annual global production of cement. According to the IEA, it should remain at a stable level over the for the period from 2020 to 2050, despite the despite the increased floor space of buildings, suggesting that optimal use is being made of cement and concrete.

8(3)%

Share of cement production in global CO_2 emissions, according to the Global Cement and Concrete Association, i.e. currently around 2.5 billion tons per year (twice more than at the beginning of the century).

(3) Chatham House Report (2018). Making Concrete Change: Innovation in Low-carbon Cement and Concrete.

17,974,000 tons

French cement production in 2021, structured around 25 cement plants, representing direct CO_2 emissions of around 18 million.

+3%

Change in the average intensity of financing in Crédit Agricole's Cement sector between 2020 and 2023. A mechanical increase due to changes in our customer portfolio, but which does not reflect the Group's action.

Figures : Crédit Agricole CIB.

2,1 billion tons of CO_2

Global level of emissions to be achieved by 2030, including 170 million tons of captured CO_2, with a clinker-to-cement ratio of 0.65 (0.7 in 2021, but with strong regional variations), to ensure that the cement sector is aligned with the trajectory of the Net Zero scenario of the International Energy Agency (IEA). According to the IEA, this will require a 4% annual reduction in direct carbon intensity.
In 2022, this intensity increased by 1%.

0.7 €BN

MEDIUM- AND LONG-TERM OUTSTANDINGS, ON-BALANCE SHEET AND OFF-BALANCE SHEET TAKEN INTO ACCOUNT IN THE GROUP'S WORK IN 2023.

10 STEEL

JEAN-PIERRE BIRAT
Metallurgist and CEO of consulting firm IF Steelman

“We must rely on recycling, which emits 4 times less CO_2 than production of new steel”

PORTRAIT MADE WITH A.I.. KEVIN REITZ / HANS LUCAS

Can you give us some key figures on the steel industry around the world?

Around 1.8 billion tons of steel is produced globally. Despite the image we may have in France and Europe, steel represents a vital and dynamic industry. Production has doubled since the late 1990s, with China's arrival on the market. Today, 55% of steel is produced in China. It's an absolutely huge amount, but I think production has peaked in this country. China has modernized: demand for steel increases when infrastructure is built, buildings are constructed and consumer goods produced, but when societies become more mature, steel consumption declines. This is the case in Europe, Japan and the United States. India will take over from China, and, perhaps, one day, Africa will top the list in turn. According to forecasts for the period from 2040 to 2050, steel production will double, amounting to at least 3.6 billion tons.

JEAN-PIERRE BIRAT
Former Technical Director of Irsid and former Director of the Arcelor-Mittal decarbonization program

So, does this mean that greenhouse gas emissions will also double?

This is the major drawback with steel: Producing one ton generates two tons of CO_2. What's more, it's hard to see how this score could be improved. Steel production is not an inefficient process that wastes energy and emits CO_2 unnecessarily. Energy is an important factor in the cost price of steel. Manufacturers have been watching their step for a long time, they are really meticulous, but iron doesn't exist in nature. It requires the transformation of ore, and this process is very energy-intensive. It uses a lot of coal and this causes massive CO_2 emissions.

Is the situation hopeless?

Definitely not. We must rely on recycling. This is one of the best, if not the best way, of decarbonizing steel production. Using scrap metal to produce new steel means consuming three times less energy and emitting four times less CO_2.

These figures explain why the collection of end-of-life iron is so efficient today: 95% of this material Is recovered for recycling. Globally, this amounts to 500 million tons. Estimates suggest that steel remains in the economy for forty years. So, we should see a massive influx of scrap metal on the market in the next few years. By 2100, 70% of new steel will be produced from recycled scrap metal. This will help to decarbonize the industry.

Yes, but 70% by 2100 is not the same as zero emissions by 2050.

By 2050, around 55% of steel may be decarbonized, and made from recycled scrap metal. The rest will have to be produced from ore. We will still have to use coal and coke. But we can try to use energy that produces fewer greenhouse gases.

Hydrogen offers an interesting alternative. The problem is that hydrogen must be produced. So, before we can use hydrogen to produce carbon-free steel, we must first have access to huge quantities of renewable energy. Factories must also be adapted to this new type of energy. We will need a complete overhaul.

This is going to be very expensive. Who will put their hand in their pocket to come up with the billions needed? Manufacturers? Governments?

While waiting for an answer to this question, we can continue producing steel via existing processes, while capturing the CO_2 emitted, and then storing it in geological structures. However, Germany is very much against this solution. We will have to negotiate. Direct electrolysis of iron ore is another interesting option. This almost ideal solution was developed in France. The first plant is scheduled to open in 2027. Finally, natural gas can be used instead of coal, but this energy is increasingly expensive and emits large quantities of CO_2. To summarize, I would say that the best solution is a mix of all these solutions.

What is the current situation in France?

France used to be one of the main steel-producing countries, as much for its production capacity as for its ability to develop new technologies. However, production has collapsed to a maximum of 16 million tons per year. Subsidies will not be enough to make the switch to hydrogen. The Net Zero emissions objective is driving up costs. Carbon-free production using hydrogen will always be more expensive than our current processes. The big risk is that what remains of steel production in France will be outsourced. ■

Interview by Jean du Terrail/WE DEMAIN

10

STEEL

“The aim is to limit the carbon footprint of the steel sector and our portfolio is broad enough to support the most enterprising players in this decarbonization”

JÉRÔME BERNARD
Global Head of Mining and Metals, , Crédit Agricole CIB

Paradox. Steel production, which is essential for decarbonization, (photovoltaic panels, automobile, wind turbines, buildings, etc.), is structurally dependent on blast furnaces, which produce primary steel from coke (metallurgical coal) and iron ore, a highly energy-intensive process. These furnaces are therefore responsible for the majority of the sector’s global emissions.

Decarbonizing the sector requires, among other things, that coal be replaced with hydrogen and electricity, while still guaranteeing quality steel. This requires major innovation and significant investment over a long period. Moreover, the International Energy Commission Agency has estimated, in its trajectory for carbon neutrality, that steel will be one of the last sectors to still use coal in 2050.

NO READY-MADE SOLUTIONS

Faced with global warming and rising carbon prices, manufacturers are ramping up their initiatives and trials. By 2030, decarbonization must primarily be achieved using mature technologies: increasing scrap-based production (recycled scrap metal, of which stocks are limited, and which is already widely used); improving energy efficiency; substituting coking coal with natural gas as a reducing agent, reducing carbon intensity by between 30 and 40%; and using biobased coal. For the period after 2030, new technologies are still being studied to continue this trend on a massive scale: replacement of natural gas with carbon-free hydrogen, electrolysis of iron ore, capture-storage (or use) of CO_2 (CCUS).

Against this backdrop, Crédit Agricole is sending a strong message by committing to reduce the carbon intensity of its portfolio by 26% between 2020 and 2030, and in particular to promote and support actions that could chart the path towards a low-carbon model.

FROM DIALOGUE WITH MANUFACTURERS TO PORTFOLIO ADAPTATION

Very active in the steel sector, in 2022, Crédit Agricole became one of the founding banks of the Sustainable Steel Principles (SSP) developed in partnership with the specialist Rocky Mountain Institute. These SSPs have established a common global framework that is aligned with climate scenarios for 1.5°C global warming and with the guidelines of the Net Zero Banking Alliance, to which Crédit Agricole subscribes. The goal is to be able to compare and monitor the actions of both manufacturers and banks, in a useful way. To achieve this decarbonization target, our action planincludes ongoing dialogue with manufacturers, and in particular, with those who are not yet aligned with the Net Zero trajectory, to consider how Crédit Agricole can support their decarbonization strategy.

To foster innovation, financing will be developed for projects involving low-carbon steel production technologies. Finally, Crédit Agricole CIB’s portfolio in this sector, using monitoring tools, will be adapted over time, giving priority to the most ambitious customers. ■

GOAL FOR 2030

-26%

carbon intensity

Emissions per ton of crude steel from the Crédit Agricole portfolio must be reduced to 1.4 tons CO_2e compared to 1.88 tons in 2020.

In France, around 15 million tons of steel are produced each year. A third comes from recycling[2].

7%[1]

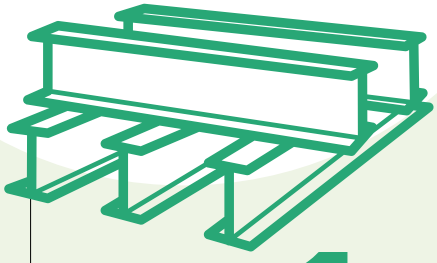
Share of the steel industry in global energy-related greenhouse gas emissions. It accounts for 4% of France's territorial emissions. This represents 22% of the industry's emissions and 18% of its thermal energy consumption. 90% of this impact comes from blast furnaces.

75%[1]
SHARE OF COKING COAL IN ENERGY DEMAND IN THE STEEL SECTOR.

1,888

billion tons

Global steel production in 2023, according to the Wordsteel association, which tracks more than 70 major producing countries. This represents around 3.8 billion tons of CO_2 emissions.



-31%

French objective to reduce greenhouse gas emissions from the "integrated" steel industry (using blast furnaces) by 2030 compared to 2015, i.e. 7.4 $MtCO_2e$. At level 2 worldwide, the target of the International Energy Agency's Net Zero scenario for 2030 is – 25% by 2030, and – 92% by 2050.

1.4 €Bn

Medium- and long-term outstandings, on-balance sheet and off-balance sheet taken into account in the Group's work in 2023.

(1) Iron and Steel Technology Roadmap of the AIE.
(2) Senate - Information report no. 649 (2018-2019), tome I.

RENEWABLE ENERGY FOR THE FUTURE ?

Hydroelectricity, solar and wind power are already being used to meet demand for carbon-free energy. Promising new technologies will help drive this green transition. A short prospective summary of the energies of the future.

BY VINCENT RONDREUX/WE DEMAIN

IKON IMAGES / PHOTONONSTOP

Oil, coal and gas account for around 80% of the primary energy consumed worldwide, and almost 50% in France. The major challenge of the energy transition is reducing this share in order to achieve carbon neutrality by 2050. To succeed, we must reduce energy consumption and rapidly develop renewable energies (RE) on a mass scale. The French strategy involves stepping up efforts to electrify the energy mix to facilitate the decarbonization of transport and heating for buildings. With its recent change of strategy for the development of nuclear energy, France has now put forward a target of 58% carbon-free energy in its energy mix, without providing a specific percentage of renewable energy (less than 14% in 2023 compared to almost 37% for nuclear power). It also plans to harness biomass (wood) to provide heating and biofuels for transport. However, these two sources of energy are fueling debate on the extent of their renewable potential. Will a technologically-mature energy like solar thermal power, which is becoming widely used in China, eventually make headway in France? What other sources of renewable energy could be developed? Hybrid solar power, which combines photovoltaic and thermal energy? Geothermal or marine energy? Below, we provide a comparative assessment of the strengths and weaknesses of each of these energy sources.

2023, a record year for renewable energy worldwide

According to the International Renewable Energy Agency (Irena), renewable energy capacity increased to 3,870 gigawatts (GW) globally in 2023, with a record-breaking rise of 473 GW. Asia, and particularly China, accounted for 69% of this increase. Photovoltaic solar power represents 73% of this growth, and wind power 24%. "Renewable energies are the only technology that can rapidly drive the energy transition in line with the objectives of the Paris Agreement," states Francesco La Camera, Director-General of Irena.

MAIN SOURCES OF RENEWABLE ENERGY

WOOD FUEL

Description: production of heat (boilers, fireplaces, stoves and wood burners), and to a lesser extent, electricity, as well as fuel from cellulose.
Pros: easily accessible.
Cons: during combustion, it emits a similar quantity of CO_2 to that of coal, which is only offset if the biomass produced naturally is greater than the biomass burned; pollution; and deforestation.
Development: significant in China, the United States, Brazil and India, etc. In France: accounted for 34% of primary renewable energy production in 2022, for 118 terawatt-hours (TWh) consumed, 90% for heating. 63% of renewable heating. Around 40 million tons of wood are burned each year, with 7.7 million domestic installations and 7,915 wood-fired boilers. 70 biomass power plants also produce electricity (837 MW). Target for 2028: 800 MW.
Potential: plans to ramp up use in Europe, particularly in France for heating, which could have adverse effects according to scientists and NGOs.

HYDROELECTRICITY

Description: production of electricity using the power of flowing water.
Pros: reservoirs can store energy and regulate the electricity supply during peak consumption periods.
Cons: dependence on rainfall and river flow.
Development: more than 1.3 million MW of installed power worldwide. In France, 2,300 power plants, including 95 large dams, produced 26,000 MW, and around 60 TWh. This accounted for 12% of electricity production in 2023.
Potential: use is increasing in Asia, Africa and South America. In France, the rivers are deemed to have reached saturation point. Target for 2028: close to 27 MW.

AGROFUELS

Description: manufacture of fuels from plants or algae (algae fuels) that can be used to produce ethanol or oil. Officially classified as renewable energy under the term "biofuels".
Pros: can be used to partially replace fossil fuels for transportation.
Cons: algae fuels offer low, even negative, energy efficiency; competition for the exploitation of fertile land; use of fertilizers and resources (phosphorus for algae fuels); and deforestation.
Development: research and development of algae fuels (more than 200 projects identified in the United States, Europe and China, etc.). Global production of agrofuels: approximately one hundred million tons of oil equivalent. In France, agrofuels accounted for 7% of primary renewable energy production in 2022.
Potential: some see major potential, for example, the oil industry, others less so, in particular NGOs and environmental associations.

BIOGAS

Description: technologies that treat organic materials (agricultural effluent, sewage treatment plants, household waste, industrial sites, landfills, etc.) to produce a gaseous mixture, mainly composed of methane and CO_2. Can also produce heat, fuel and electricity.
Pros: transformation of materials that would emit greenhouse gases anyway; possibility of cogeneration.
Cons: availability of waste over time.
Development: 21,000 MW of installed capacity worldwide, primarily in Germany, (around a third), Italy, China, Turkey and Thailand. In France: biogas accounted for 6% of primary renewable energy production in 2022. 600 MW of installed power from over 1,000 facilities. Agricultural methanization: 665 units for 214 MW in 2022.
Potential: local. France's target for 2028: 400 MW of installed electrical capacity for methanization.

ONSHORE WIND POWER

Description: production of electricity using wind energy to activate the blades of a turbine.
Pros: available anywhere that has the right wind conditions.
Cons: intermittency; need for storage or compensation when production drops; acceptability for local communities.
Development: in 2023, 945,000 MW generated by onshore wind turbines. 12.5% increase compared to 2022, driven by China and the United States. Other major players: India, Germany and Spain. In France: close to 22,000 MW of installed capacity, producing more than 51 TWh, and accounting for 10% of electricity production in 2023. 12% of primary renewable energy production in 2022.
Potential: increasing on all continents. 2028 target for France: up to around 34,000 MW, or close to 6,000 more turbines than in 2018 (15,000 MW installed capacity).

SOLAR PHOTOVOLTAIC POWER

Description: production of electricity through electronic components that transform light radiation into electricity.
Pros: general availability in sunny weather; local production and consumption.
Cons: intermittency; need for storage; cost of small power plants; financial burden of feed-in tariffs.
Development: in 2020, 1,400,000 MW of installed power, an increase of close to 100% since 2020, and a 32% rise in one year. Leading the pack, China (43%), United States, Japan, Germany, India, Italy and Australia. In France: 19,000 MW of installed power, with production of around 19 TWh. 6% of primary renewable energy production in 2022, 4.4% of electricity production in 2023.
Potential: the worldwide energy transition is heavily dependent on solar photovoltaic power. France's target for 2028: up to 44,000MW.

ISTOCK

WHAT ABOUT WASTE?

Urban waste, half of which is used in renewable energy production, and particularly household trash, can produce both heat and electricity when incinerated. In France, energy production of this "renewable waste" is currently estimated at around 15 TWh (accounting for around 4% of primary renewable energy production). However, setting aside the pollution issues, waste is not viewed as a potential future energy source as reduction and recycling policies have already been put in place.

WHAT ABOUT HEAT PUMPS?

Although included in renewable energy production, heat pumps are not a natural source of renewable energy. These systems run on electricity to provide, captured
either in groundwater by geothermal energy, or more often, in the air.
As a result, less electricity is required to produce the same amount of heat. In France, heat production from heat pumps is currently estimated at around 40 TWh, or 12% of primary renewable energy production.

OFFSHORE WIND POWER

Description: production of electricity from wind turbines installed at sea on fixed supports (fixed foundation in shallow areas) or floating turbines.

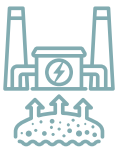
Pros: wind levels are more constant at sea than on land; more powerful turbines.

Cons: infrastructure, cost and maintenance.

Development: close to 73,000 MW of installed power in 2023, including more than 37,000 in Europe. China is leading the way (with the equivalent of 6,000 wind turbines) ahead of Great Britain (around 2,400). In France: around 480 MW of installed capacity at the end of 2023 (installed wind turbines) with 80 wind turbines commissioned at the Guérande-Saint-Nazaire wind farm in late 2022, before the Saint-Brieuc and Fécamp wind farms in 2024 (950 MW from 133 wind turbines) . Floating wind power test sites located in Nantes, Brest and Port-Saint-Louis du-Rhône.

Potential: the International Energy Agency sees major potential, particularly in Europe and Japan. Target for 2028: up to 6,200 MW. Ademe estimates the technical potential of floating wind turbines in France at 140,000 MW distributed over 25,000 km², and 80,000 MW for installed wind power over 10,000 km².

GEOTHERMAL : 14 000 MW of installed capacity worldwide for electricity production, mainly in the United States and China



GEOTHERMAL ENERGY

Description: technology that extracts heat from the different depths of the Earth, for direct use or to produce electricity via water vapor.
Pros: possible use for air conditioning; compatible with heat pumps.
Cons: local use only to avoid losses; exhaustible reservoirs; earthquake risk associated with deep drilling.
Development: 14,000 MW installed power worldwide for electricity production, mainly in the United States, China, the Philippines, Turkey, New Zealand, Italy and Iceland. In France: more than 17 MW of installed electrical power, notably in Guadeloupe (Bouillante power plant), for over 100 GWh of electricity and more than 6 GWh of heat production, accounting for 2% of primary renewable energy production in 2022.
Potential: significant local potential. Doubts in France around electricity production (earthquakes occurred at the Vendenheim site, near Strasbourg). Target for 2028: between 25 and 85 MW in mainland France and overseas.

SOLAR THERMAL POWER

Description: production of heat for domestic water, heating and certain industrial needs.
Pros: general availability in good weather, without the need for advanced technology to heat domestic water; possible use for air conditioning.
Cons: more complex facilities required for heating systems.
Development: 540,000 MW of installed power worldwide in 2022, representing around 800 million m² of solar collectors. The leaders are China (close to half of capacity), United States, Germany. The leaders per capita: Cyprus, Israel, Barbados, Greece and Denmark. In France: close to 4 million m² for 2.4 TWh of heat production in 2022, including 48% overseas. 0.7% of primary renewable energy production in 2022.
Potential: significant potential for the manufacturing and construction sectors.

THERMAL SOLAR POWER : 540 000 MW installed capacity worldwide, significant potential for manufacturing and construction

TIDAL POWER

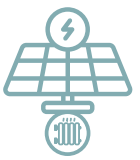
Description: electricity generated by the surge of water during the rise and fall of tides. This form of energy is converted in hydroelectric power plants.
Pros: Continuous and predictable supply of energy.
Cons: involves building tidal barrages in estuaries which are fragile ecosystems.
Development: around 500 MW of installed capacity worldwide, including two tidal power stations, one in France on the Rance river near Saint-Malo (dating back to 1966), and one in South Korea. Excluding offshore wind power, tidal power plants currently generate the majority of marine energy, with other sources totaling less than 30 MW.
Potential: considerable potential in theory, but this may be outweighed by the environmental impact. No current plans for development in France.

PASSIVE SOLAR DESIGN

Description: construction systems that use design and architecture to harness the power of the elements (sun, wind, humidity, etc.) and use materials (wood, brick, biomaterials, etc.) that collect, store and distribute energy from light radiation inside buildings.
Pros: no or very little need for heating (passive building design).
Cons: more difficult to apply these techniques during energy renovation work.
Development: increasingly used.
Potential: important role in energy efficiency strategies.

ISTOCK

RENEWABLE ENERGIES IN THE TESTING OR DEVELOPMENT PHASE



HYBRID SOLAR POWER

Description: technologies that use solar panels to produce heat through thermal sensors and electricity via photovoltaic cells.
Pros: energy efficiency/surface area ratio; can be used in combination with heat pumps.
Cons: intermittent energy; the higher the temperature, the less efficient.
Development: an emerging technology. In 2022, over 1.5 million m² installed worldwide–with more than 600,000 m² in France–for a capacity of 800 MW thermal and 280 MW electric production.
Potential: significant potential, particularly for the construction sector.

WHAT ABOUT HYDROGEN?

At present, more than 90% of hydrogen is produced using gas or coal. Another method involves splitting water via electrolysis. This is the method used to produce low-carbon hydrogen from "renewable" electricity. It is hoped that use of natural hydrogen found underground will be further developed in the future.

AND METHANATION?

Methanation is an industrial process which transforms hydrogen into methane and water, through its reaction with CO_2 or carbon monoxide. This process, also known as "power-to-gas" (transformation of electricity into hydrogen to manage intermittent surpluses of the significant amount of electricity produced from wind power.

WHAT ABOUT STIRLING ENGINES?

Named after its Scottish inventor in the early 19th century, Robert Stirling, the Stirling engine is a "hot air" engine, that works via external combustion in contrast to thermal engines (internal combustion). Notably, these engines can be powered by heat from the sun. They are used for satellites and military ships, demonstrating that they could be rolled out on a larger scale. In Phoenix, Arizona, in the United States, Stirling engines are already used to produce electricity.

CONCENTRATED SOLAR POWER

Description: technologies that concentrate solar radiation by using mirrors to generate intense heat. This energy heats a fluid which can produce electricity in a thermal power plant.
Pros: possibility of storing hot water and of cogeneration, for example, it can be used to desalinate sea water.
Cons: complex technology.
Development: close to 6,900 MW of installed power worldwide. France has a power plant in operation, located in Llo (Pyrénées-Orientales), that can also store heat.
Potential: significant potential in dry and sunny climates.

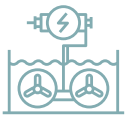
OTHER RENEWABLE ENERGIES BEING TRIALED OR RESEARCHED

MARINE SOLAR POWER

Description: production of electricity using offshore solar panels, installed at sea, for example between wind turbine masts.
Pros: saves space on land; possibility of growing algae.
Cons: damage caused by the marine environment (salt, swell, currents, storms, etc.); pollution.
Development: in the experimental stage (Singapore, Dubai, Netherlands, Belgium, etc.). In France, test sites in Nantes, Port-Saint-Louis-du-Rhône, etc.
Potential: in island areas with limited land space.

OSMOTIC ENERGY

Description: technologies that harness the energy available due to differences in the salinity of estuary waters to produce electricity.
Pros: supply of water from estuaries.
Cons: fragile environments; cost; low energy yield from organic membranes.
Development: in the research stage.
France : plans to install a pilot facility on the banks of the Rhône river by the Rennes start-up, Sweetch Energy.
Potential: significant potential in theory (2,000 TWh/year).



MARINE TIDAL ENERGY

Description: Electricity produced using ocean currents.
Pros: Power supply to remote islands.
Cons: infrastructure, cost and maintenance.
Development: still in the experimental stage.
In France: demonstrators have been installed in Fromveur in Ouessant, and Paimpol-Bréhat.
Potential: between 75,000 and 100,000 MW worldwide. France: up to 3,500 MW according to Ademe.

WAVE POWER

Description: use of waves to produce electricity.
Pros: supply of energy to remote islands or coastal areas.
Cons: cost, safety (storms) and maintenance.
Development: numerous tests are being conducted around the world. In France: test sites in Nantes and the Brest harbor.
Potential: theoretically possible to produce up to 80,000 TWh/year.

RIVER TURBINES

Description: use of river currents to produce electricity.
Pros: supply of energy to remote areas.
Cons: maintenance (submerged waste, etc.).
Development: in the experimental stage. In France: test site in Bordeaux.
Potential: global estimate of 50,000 MW. In France: 250 MW.

OCEAN THERMAL ENERGY

Description: harnesses the temperature differences between warm surface waters and the cold depths.
Pros: possible use for air conditioning, production of fresh water, development of activities (aquaculture, cosmetics, etc.).
Cons: infrastructure, environmental impact.
Development: in the experimental stage. France has an active prototype in the Reunion. Another project is currently on hold in Martinique.
Potential: significant potential, mainly in the inter-tropical zone (close to 10,000 TWh/year in theory). ■

SÉBASTIEN PROUST / CRÉDIT AGRICOLE S.A.

Crédit Agricole Group Headquarters in Montrouge. This Eco-Campus, named Evergreen, has been awarded the BiodiverCity®Life label.

ALL IMPACTED, ALL INVOLVED!

The Group's 39 Regional Banks are developing their expertise to keep pace with emerging climate risks, which can have devastating consequences for their customers. Four senior managers discuss the new transition business lines and the significant capacity for adaptation and innovation that drives them.

INTERVIEW BY LAURENCE MARLIAC/WE DEMAIN

YANN AVRIL / BIOSPHOTO / AFP

Flooding in Pas-de-Calais, in the village of Guînes and the surrounding area, November 2023.

THIERRY LEBRUN
DIRECTOR OF THE TRANSITION BANK,
CRÉDIT AGRICOLE NORD DE FRANCE

“THREE NEW BUSINESS LINES TO DRIVE THE ECOLOGICAL TRANSITION”

7500 customers affected, €40 million in compensation–just for Nord-Pas-de- Calais–and an endowment fund of €500,000 created for the most vulnerable groups: the storms and floods affecting the Nord and Pas-de-Calais departments have had a devastating impact. In the French region most exposed to climate risks–the economic impact has increased fivefold over the last ten years–our Regional Bank is at the forefront: we

Firefighters help residents cross the street in a town in the French department of Moselllle, near the German border, May 2024.

JEAN-CHRISTOPHE VERHAEGEN / AFP, CA

have been working on climate risk modeling for many years. Since 2021, we have been mapping the region and by 2025, we will have a short-, medium- and long-term scoring tool designed for our advisors to inform their discussions with customers. By becoming the Transition Bank, we have driven forward our Bank's entire Societal Project. We advise our customers on climate and environmental issues with regard to mitigation and adaptation, and our strategy covers all economic stakeholders, including private customers. Our aim as a Bank is to support the region through our banking, insurance and real estate operations.

Our business lines develop synergies between them to strengthen the resilience of our model: insurance serves as a shield for banks in the short term, ensuring that its customers are insured and compensated for climate risk; for its part, the bank acts as a shield for insurers in the medium term, by financing regional climate adaptation measures and helping to minimize insurance claims relating to climate change. While there is an urgent need to invest in climate change adaptation, mitigation remains a vital issue. We must also reduce greenhouse gas emissions. To achieve this, we decided to create three new business lines. Firstly, the energy and energy transition business line, for which we created a specialist agency on January 1. The second business line is energy-efficient renovation of homes, which offers a new customer experience, with a dedicated sales network support team. Finally, we have established the agricultural and food transition business line to address all decarbonization-related issues, with the aim of supporting all our agricultural customers in the sector's transition and decarbonization. €500 million will be allocated each year to projects in all markets relating to cruising speed in the Nord and Pas- de-Calais. These three new business lines, with training for all employees, and the Bank's three objectives, reflect its commitment to supporting its customers and the region, while collectively driving the ecological transition. ■

LAURENT BENNET
CEO OF CRÉDIT AGRICOLE
DES SAVOIE

"WE WILL NO LONGER BE FINANCING THE EXPANSION OF SKI AREAS ON NEW SLOPES"

ADOBESTOCK

The Alps are being hit particularly hard by global warming, which is rising at twice the rate as in the rest of Europe, with major implications for winter tourism and the agricultural sector.
Whether directly or indirectly, tourism accounts for 60% of the revenue of local traders in the Savoie and Haute-Savoie departments, so it's clear that the stakes are high. This transition is also affecting the industrial sector in these two departments, and automotive subcontracting in particular, an activity with a strong local presence which must support the shift to electric vehicles that manufacturers need to make. Winter sport resorts are already adapting their business model, but for the most part, the exact form this transformation will take is still a work in progress. There is no one-size-fits-all strategy, as the situation in each resort is different. We need a collective solution, with an approach tailored to each valley and resort. The challenge is to find alternatives to a model that has traditionally been built around skiing because of the natural environment and altitude.

INVESTING IN ALTERNATIVES

We need to strike a new and complex economic balance by using the revenue from skiing to invest in alternatives. Ski resorts are already heading in this direction by developing new outdoor and exploration activities, and by diversifying their operations between summer and winter. There is no coordinated "project" like the "Plans Neige" (Snow Plans) in the 1960s and 1970s. However, for our part, we've spent several years strategizing on how we can play an active role in our region's transition.
In view of this situation, we've made the decision to continue supporting the modernization of

The mountains are also a tourist destination in summer, and the alpine pastures and hiking trails will soon become a vital refuge in the face of climate change. Pictured here, the Semnoz mountain

ski areas, for example, but we will no longer finance their expansion to new slopes. We've been applying this strategic thinking since 2019, to develop an idea of what a "desirable future" for tourism looks like, and so that we can challenge and engage in dialogue with project leaders based on extra-financial assessment, and, ultimately, make informed lending decisions. We've also incorporated a risk-based approach using forecasting tools and data from Climsnow, a model developed by Météo France and INRAE. In collaboration with G2A Consulting, we've also established the Tourism Observatory, which aims to monitor changes in economic, social and environmental indicators for the sector, as well as providing a forum for discussion to raise awareness and promote the development of new business models. Solutions will also need to come from innovation. Since 2017, the Alpes Tourisme Lab has been based in the "Village by CA des Savoie", in the heart of the Technolac center in Bourget du Lac. Founded with French Tech, and through partnerships with major players like Compagnie des Alpes, Val Thorens and Aix-les-Bains Riviera des Alpes, it connects companies and start-ups to help them shape the tourism of the future. ■

Water levels of the Têt river are at their lowest ever, due to continued drought in the region of Catalonia, February 2024.

DOMINIQUE BERBAIN/GAMMA RAPHO, CA

NICOLAS TAVERNIER
MANAGING DIRECTOR, CRÉDIT AGRICOLE SUD MEDITERRANÉE

“THE ENTIRE ECONOMY MUST ADAPT TO MAINTAIN THE PROSPERITY OF THIS REGION BLESSED BY THE GODS”

For more than two years, we have recorded 50% less rainfall than normal. That's huge! The IPCC has clearly demonstrated that global warming will be a problem in the Mediterranean region much earlier than elsewhere. One very positive aspect is that the Pyrénées-Orientales department has become a pioneer in climate initiatives, such as the exemption relating to municipal swimming pools, to ensure they only change their water once a year instead of twice, subject to additional checks. The prefecture is also in the process of mapping historic hillside reservoirs so that some of them can be put back into service. In view of this heightened awareness around water issues, we are working on an investment fund for local transitions, to complement the national Transitions & Energies schemes.

Since September 2023, we have been mobilizing a budget of €200 million in loans, reserved for transition projects in the Pyrénées- Orientales and Ariège, that prioritize the water issue. The aim is to support individuals, professionals, business leaders, farmers, public authorities and project leaders, to ensure the safeguarding and sustainability of this blue gold. This financing can also be renewed. Initiatives have been launched in all sectors. Among those we are supporting: a company that collects rainwater, a farmer aiming to adopt new soil management practices, and an authority involved in wastewater treatment. With regard to the water issue, it is important to avoid pitting sectors of activity against one another. We must fight against division. Water is a common good, it affects everyone. The entire economy must adapt and mutate to maintain the prosperity of this region blessed by the gods. Whether chambers of commerce and industry, the agricultural and trade sectors, tourism professionals, hotel unions: everyone needs to work together. Each sector must play its part. Clearly, we are responding to what is a crisis situation, but we are taking an ethical, long-term perspective, by focusing on the environmental, economic and social transition. The goal is to share our experience with as many people as possible. We believe this mindset is essential. Innovating through cooperation is the challenge for the Innovation Village by CA, which will specialize in transitions, and is set to open in the first quarter of 2025 in Perpignan. ■

A beach in Vendée, in Saint-Hilaire-de-Riez, where waves caused damage during a storm, January 2014.

JEAN-SEBASTIEN EVRARD / AFP. CA

NICOLE GOURMELON
MANAGING DIRECTOR
OF CRÉDIT AGRICOLE
ATLANTIQUE VENDÉE

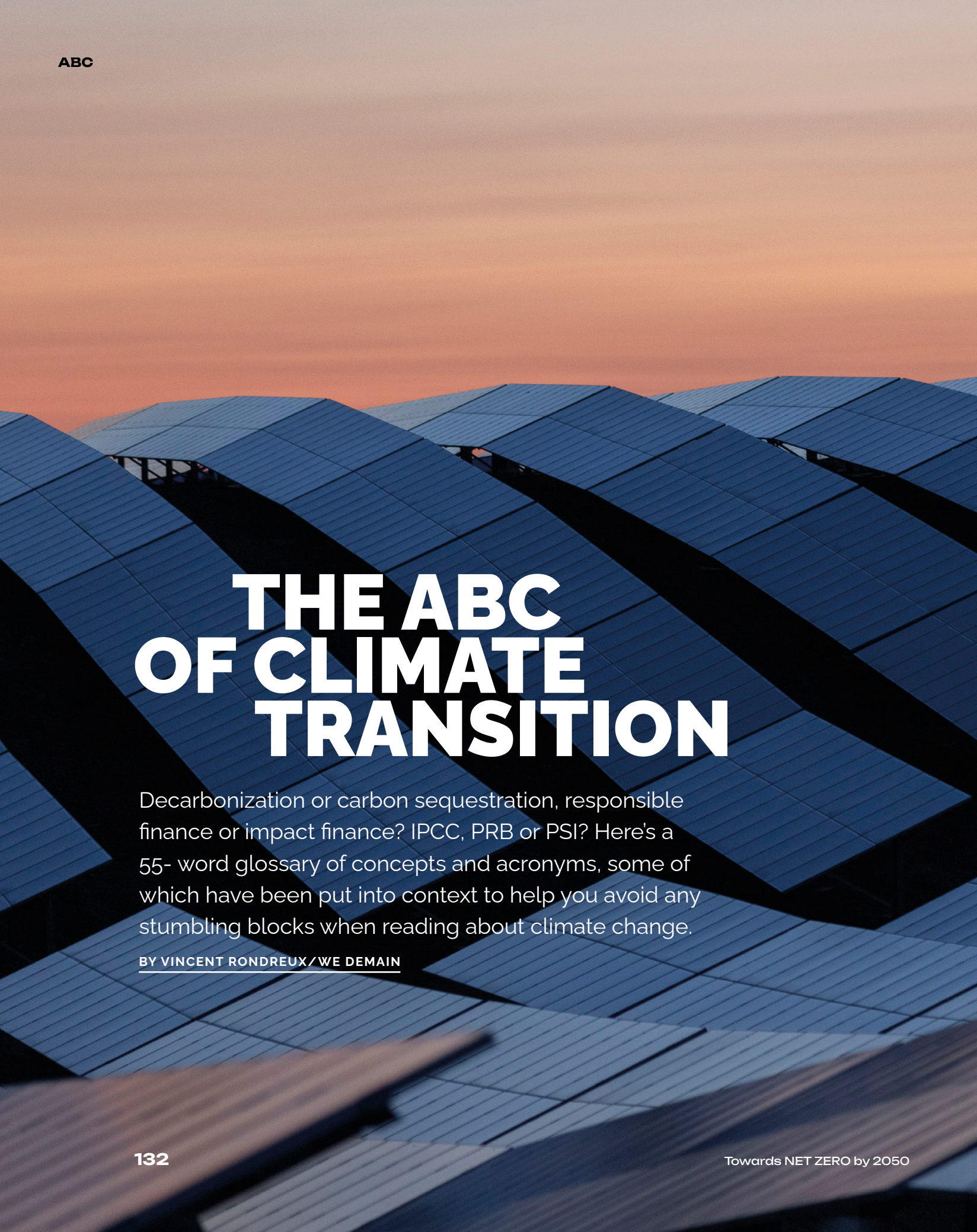
"OUR LOAN DECISIONS TAKE CLIMATE RISKS INTO ACCOUNT"

Evoking climate risk means referring to two types of harm: physical risk, such as storms, floods, and drought, and so-called transition risk, like loss of profitability, or even the collapse of certain economic activities. Our region is being affected by a number of problems: flooding, drought and the phenomenon of clay shrinkage and swelling, which can cause landslides, as well as coastal erosion with retreating coastlines. We have produced a map of activities that are particularly exposed to these physical and transition risks. At first glance, the most vulnerable sectors are agriculture and real estate. Geographically-speaking, tourist and coastal areas, and the Nantes metropolitan area, are particularly exposed to these climate risks.

As insurers, we saw an increase in climate-related claims of more than 7% in early 2024 compared to 2023. We are working with scientists from the IPCC of Pays de la Loire to develop preventive measures to limit the number of these claims. Taking into account climate risks (and more generally extra-financial risks) in our lending decisions is part of our roadmap. To address these physical and transition risks from a perspective of prevention and insurance coverage, we have developed our expertise and organized our operations to ensure we are in a position to anticipate issues and adapt.

Today, awareness-raising and training are a priority; internally at the company, and for our customers and the general public.In addition to e-learning training materials on climate issues for all employees and managers of the Regional Bank, with, for example, the creation of climate workshops, we are the only bank that, in 2023, designed and implemented an employee certification course on CSR with Audencia, the Nantes business school. Fifteen employees have been trained to support companies in their transitions. For our customers, we offer webinars and take part in numerous workshops for regional leaders. On our Campus by CA, we also organized a conference on physical risks for managers and elected officials with experts from the IPCC.

We have also established the Atlantique Vendée Energy branch, a vertical network specializing in five major areas, that will finance, invest in, produce, insure, market and advise on the energy transition, for all our customers throughout the region. With the CA Group, we also created the new position of energy transition advisor, as well as establishing partnerships and launching a platform, etc. Finally, our Regional Bank is leading the way on new extra-financial reporting for the Crédit Agricole Group. We provide information on the environmental impact, as well as the social and societal implications of our business, and we're very proud of this! ■



THE ABC OF CLIMATE TRANSITION

Decarbonization or carbon sequestration, responsible finance or impact finance? IPCC, PRB or PSI? Here's a 55- word glossary of concepts and acronyms, some of which have been put into context to help you avoid any stumbling blocks when reading about climate change.

BY VINCENT RONDREUX/WE DEMAIN

Les Mées photovoltaic power plant with 100,000 solar modules in Alpes de Haute Provence.

LANDO HASS / REA

A

ADEME

The French Agency for Ecological Transition is a French industrial and commercial public body. It helps to implement public policy on the environment, energy and sustainable development.

AGROFUELS

Agrofuels account for more than 10% of primary renewable energy consumption in France, the same proportion as wind power: bioethanol (corn sugar, wheat, sugar beet, etc.) and biodiesel (rapeseed, soya, and palm oil), etc. Their "organic" label is disputed: it causes confusion with organic agriculture, creates competition with the food sector and requires changes in land use, etc. A massive rise in the use of these fuels could also increase deforestation. By focusing on second-generation (plant waste, wood) and third-generation (algae) agrofuels, the national low-carbon strategy has set a target for agrofuels to account for up to 50% of aviation fuel by 2050.
(Sources : www.statistiques.developpement-durable.gouv.fr/chiffres-cles-des-energies-renouvelables-edition-2023 : geoconfluences.ens-lyon.fr/glossaire/agrocarburants-biocarburants ; www.ecologie.gouv.fr/sites/default/files/SNBC%20r%C3%A9sum%C3%A9%20vdef7.pdf)

C

CARBON NEUTRALITY

A concept that was first developed in the IPCC's reports, the aim of carbon neutrality is to strike a balance between greenhouse gas emissions generated by human activity and the absorption of these gases by natural reservoirs, mainly forests and crops, but also by artificial reservoirs – via industrial capture and storage of CO_2, for example.
Carbon neutrality, which France aims to reach by 2050, involves reducing current emissions six- or sevenfold, and thus doing away with fossil fuels almost entirely. To achieve this objective, we need to transform the economy and our lifestyles. RTE predicts that transport and distribution networks will evolve "towards a system with a high share of renewable energies". For the moment, France's aims for 2023 (initially revised downwards) must be met in terms of "gross" greenhouse gas emissions, while there was a "surprise" 4.8% drop in emissions in 2023. This was partly due to less carbon-intensive electricity production, but also to reduced electricity demand, an increase in prices, the sluggish performance of certain high-emitting sectors and even the mild weather in December and January.

CARBON SEQUESTRATION

Carbon sequestration involves a set of processes for the long-term storage of carbon dioxide away from the atmosphere, thereby reducing the greenhouse gas emissions responsible for global warming. There are two main types of sequestration: industrial or artificial sequestration and biological or natural sequestration.
(Source: supagro.fr/ress-pepites/processusecologiques/co/RegSequestrationC.html)

CLIMATE DENIAL

Climate denial is a refusal to accept the existence or scope of global warming caused by human activity, in contradiction with scientific consensus defined through climate change studies, and included in reports produced by the Intergovernmental Panel on Climate Change (IPCC).
Climate denial can be explained by several factors, including economic interests, resistance to change, political ideology, misinformation, and cognitive bias. These factors can lead individuals or groups to reject or minimize the scientific evidence of climate change.

CO_2E

CO_2 or carbon dioxide equivalent is a metric created by the IPCC. It is used to compare greenhouse gases (GHGs) based on their global warming potential. It converts the quantity of greenhouse gases emitted (other than CO_2) into the equivalent quantity of carbon dioxide with the same global warming potential. This metric is used to compare the impact of greenhouse gases on the environment and simplifies this comparison with a single index.

D

DECARBONIZATION

Decarbonization covers all the measures and techniques put in place to reduce greenhouse gas emissions and the carbon footprint of an organization, business sector or country.

E

ELECTRICITY

France currently produces around 500 terawatts/hour (TWh) of electricity each year, two-thirds of which comes from nuclear power, far ahead of hydraulic power (12% in 2023), wind power (10%), thermal energy from fossil fuels, particularly gas (6%) and solar power (4%). The current national low-carbon strategy (SNBC) aims to increase this consumption to 645 TWh by 2050, with the electrification of transport and industry, but by a lower percentage than that predicted in Germany and the United Kingdom. Electricity should then account for 55% of the energy consumed in France. However, the outlook for electricity consumption has been revised upwards "all over the world, and particularly in Europe, as a result of more ambitious climate objectives," notes RTE. France will have to keep up with this trend, particularly in view of low-carbon reindustrialization needs which could increase electricity consumption to around 750 TWh. Renewable energy currently accounts for around 25% of French electricity consumption. The plan is to increase this share to 40% by 2030 and 50% by 2050, but other scenarios have also been proposed.
(Sources : analysesetdonnees.rte-france.com/bilan-electrique- 2023/synthese ; assets.rte-france.com/prod/public/2021-10/BP2050_rapport-complet_chapitre3_consommation_0.pdf ; rte-futursenergetiques2050.com/trajectoires/trajectoire-de-reference ; rte-futursenergetiques 2050.com/trajectoires/reindustrialisation-profonde)

ELECTRIC MIX FINANCED BY CRÉDIT AGRICOLE

The financed electricity mix refers to all energy sources financed by the Crédit Agricole Group used to produce electricity (wind, coal, gas, etc.).

ENERGY EFFICIENCY

Energy efficiency is the process of reducing the amount of energy

Hydroelectric development in Villerest, in the Loire department. Pictured here, water being released from the dam's five gates.

PIERRE GLEIZES / REA

needed to perform a task or provide a product or service, thus avoiding energy waste. Energy efficiency includes a range of measures, and is generally achieved by adopting a more advanced form of technology or production process, or by applying specific methods to reduce energy losses. Energy efficiency is an effective means of fighting global warming.

ENERGY INDEPENDENCE

Energy independence refers to a country's ability to meet its energy needs without having to import energy resources from elsewhere. This often means developing domestic energy sources, such as renewable energy, nuclear power, or local fossil fuels. As for France, it is partially dependent on energy imports for certain fossil fuels, such as oil and natural gas. However, thanks to its large nuclear power capacity, which provides much of its electricity, France has a certain degree of energy independence. It is also investing in renewable energies to further reduce its energy dependence.

ENERGY MIX

Although nuclear power dominates the French electricity mix, electricity accounts for just 27% of final energy consumption (figure from 2022), 60% of which is dependent on fossil fuels. The rest is made up of biomass for heating (mainly wood), agrofuels and waste. In this overall mix, final energy consumption was around 1,500 TWh in 2022. Based primarily on energy efficiency, France's objective is to reduce this consumption to 930 TWh in thirty years: by more than half for electricity, around 30% for renewable energies excluding electricity, and more than 10% for low-carbon gas, notably hydrogen, with only marginal use of fossil fuels. Regardless of whether nuclear power sees a resurgence, "the electricity system of the future will be highly dependent on variable renewable energies," warns RTE. The technical challenge will be to "manage regular day/night cycles (for solar power) but also major variations in wind production". Digital technology will play an increasingly important role. There will also be closer interdependencies within France and on a European scale, and network and storage infrastructure "ranging from small distributed batteries to new gas power plants based on low-carbon gas stocks".

(Sources : www.statistiques.developpement -durable.gouv.fr/edition-numerique/chiffres-cles-energie-2023/pdf/pages/donnees-cles.pdf ; www.statistiques.developpement-durable.gouv.fr/media/6369/download?inline ; assets.rte-france.com/prod/public/2022-06/FE2050%20_Rapport%20complet_3.pdf ; assets.rte-france.com/analyse-et-donnees /2023-01/Futurs-Energetiques-2050-principaux-resultats_0.pdf)

EMISSIONS IN ABSOLUTE VALUE VS IN INTENSITY

Absolute emissions are the basic unit for measuring GHG emissions and represent the total emissions produced (expressed in tons of CO_2, for example). Emission intensity measures the volume of emissions produced relative to another relevant unit of measurement. For example, CO_2 emissions can be counted per unit of production or per km traveled.

ESG

ESG refers to the environmental, social and governance criteria used to assess the ethical and sustainable impact of investment in companies and industries.
Environmental (E): these criteria evaluate a company's impact on the environment. This includes waste management, conservation of natural resources, reduction of greenhouse gas emissions and sustainability of operations.
Social (S): These criteria examine how a company manages its relationships with employees, suppliers, customers and the communities where it operates. This includes respect for human rights, working conditions, health and safety, and community engagement.
Governance (G): These criteria relate to the internal governance of the company, including its management structure, compensation practices, audit processes, internal controls, and shareholder rights.

EVIC

Enterprise Value Including Cash (EVIC) measures the total value of a company, including its cash and cash equivalents, in addition to the market value of its shares and net debt. This gives potential investors a more complete overview of the company's true value.

F

FINANCED EMISSIONS

Financed emissions are all GHG emissions generated by loans.

FOSSIL ENERGY

Over the next thirty years, the share of fossil fuels (oil, coal and gas) in the French energy mix should drop from 60% to almost 0%. This is the central focus of the national low-carbon strategy. The new European target for reducing greenhouse gas emissions (–55% by 2030) will require fossil fuels to be phased out more quickly in three of France's main greenhouse gas-emitting sectors: transport, industry and construction. The following measures are required: halting the sale of cars with thermal engines, phasing out fuel oil use for heating, switching from gas to heat pumps, and "strong reinvestment in the industrial production sector," according to RTE.

G

GAS

Natural gas currently accounts for 18% of final energy consumption in France (excluding electricity in 2022). This gas can be "conventional", the most widely used form, "associated" with an oil or produced from coal. It can also be condensed and liquefied at very low temperatures (LNG) to facilitate its storage and transport by LNG tankers. Every year, France imports around 500 TWh in Gross Calorific Value (TWh GCV) of gas (640 in 2022). In 2022, as a result of the war in Ukraine, the United States became France's leading supplier (25% of gross imports), ahead of Norway (22%), Russia (15%), Algeria (8%) and Qatar (4%). France's reliance on gas leaves it exposed to price variations depending on the geopolitical situation and the state of the world economy. The LNG option avoids the need for gas pipelines, particularly from Russia. However, using natural gas generates greenhouse gases (CO_2 and methane) wherever it comes from, especially if it is produced by hydraulic fracking of the subsoil, as in the United States. The low-carbon objective involves reducing the share of this fossil energy, and replacing it with low-carbon gas, like biogas (produced from the decomposition of biomass), hydrogen, etc. Stepping up efforts on this transition will reduce this dependence, including on LNG.
(Sources: www.statistiques.developpement-durable.gouv.fr/edition-numerique/entre-prises-cles-energie-2023/14-gaz-naturel; www.carbone4.com/analyse-gnl-strategie-long-terme)

GHG

Greenhouse gases (GHG) are a group of gases naturally present in the atmosphere, which trap the sun's rays, keeping the planet's surface temperature at a reasonable and stable level. This is called the greenhouse effect. However, as a result of human activity, the concentration of these gases in the atmosphere has increased, reinforcing the greenhouse effect. These gases are thus responsible for, and play a major role in, global warming. There are several

greenhouse gases with varying effects on global warming: the main ones being CO_2, methane, nitrous oxide and hydrofluorocarbons. (Source: novethic.fr/lexique/detail/gaz-a-effect-de-serre.html)

GREEN IT

Green IT, or responsible digital technology, refers to all the practices and solutions used by companies to reduce the ecological, environmental and social impact of their digital operations. This may include extending the lifespan of electronic devices or using eco-friendly search engines.

H

HEAT

Three quarters of heat is used for buildings (residential and commercial), accounting for around half of final energy consumption in France. Most of this energy is produced by fossil fuels. In 2022, the share of renewable energy amounted to 27% while the national target was set at 33%, rising to 38% by 2030. There are various reasons for this delay, the slow pace of renovating buildings to be more energy efficient and of replacing oil and gas boilers with renewable energy. In addition, 63% of renewable heat is produced from biomass (domestic wood, wood-fired boilers, etc.), ahead of heat pumps (23%), renewable gas (4%), geothermal energy (4%), and solar thermal energy (1%).
(Sources: reseaux-chaleur.cerema.fr/espace-documentaire/generalites-sur-la-heat; www.syndicat-energies-renouvelables.fr/wp-content/uploads/basedoc/panorama_chaleur_2023_light.pdf; www.ecologie.gouv.fr/sites/default/files/2020-03-25_MTES_SNBC2.pdf)

I

IEA

The International Energy Agency is an international organization created by the OECD in 1974. It works on energy security, economic development, environmental awareness and international engagement. Its mission is to ensure a sustainable and secure future energy supply for all. It publishes an annual report, the World Energy Outlook, which outlines energy projections for the years to come.

IMPACT FINANCE

Impact finance is a branch of sustainable finance which involves investing with the aim of having a positive environmental and social impact, that can be measured alongside a financial return.
(Source: financeresponsable.com/comprendre-la-finance-responsable)

IPCC

The Intergovernmental Panel on Climate Change, founded in 1988, is a body responsible for evaluating available scientific, technical and socio-economic data, in order to provide a detailed assessment of the reality, causes and consequences of global warming. IPCC reports are validated via a rigorous process made up of several stages: drafting of the report by international experts, several rounds of peer and government review, and finally, line-by-line approval of the Summary for Policymakers by member states during an IPCC plenary session. The plenary assembly of the IPCC is made up of representatives of the organization's member states, which currently include 195 countries.

IRENA

The International Renewable Energy Agency is an intergovernmental organization, made up of 180 countries, focused on promoting renewable energy internationally. It serves as a platform for international cooperation, supports countries in their energy transition and provides data and analysis on technologies, innovation, financing and investments linked to renewable energies.

N

NET ZÉRO

The term Net Zero, or "net zero emissions," means that global greenhouse gas emissions are reduced to as close to zero as possible. The remaining greenhouse gas emissions are absorbed by natural or artificial carbon sinks.
Source: un.org/fr/climatechange/(net-zero-coalition)

NUCLEAR

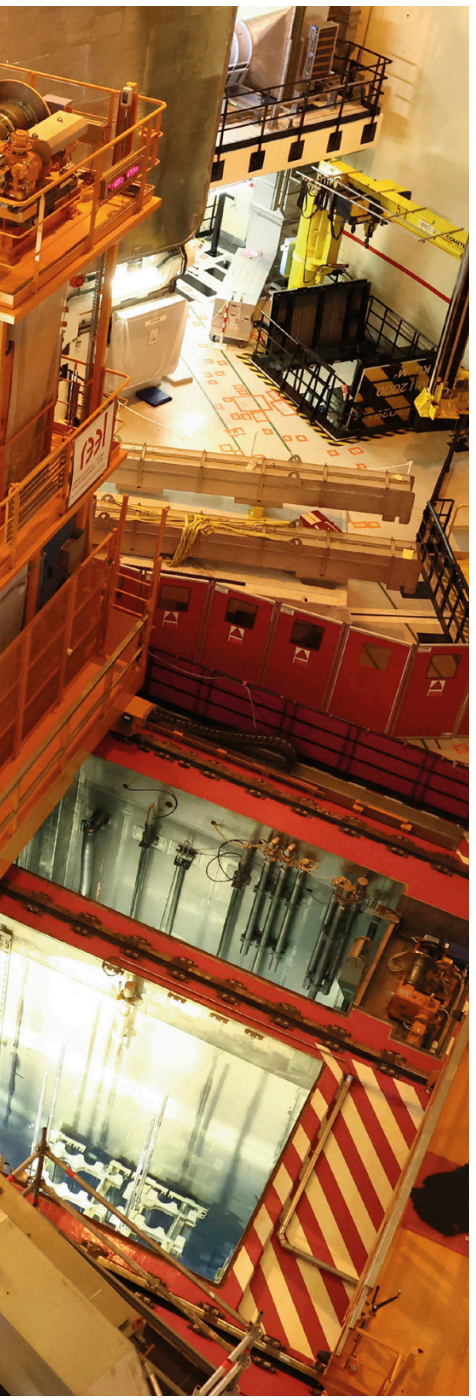
France has built its current electricity mix around nuclear power. The problem being that: "the current power plants, most of which were built in the 1980s, will have to close by 2060. An industrial constraint," warns RTE. Initially, France's decarbonization strategy was based on developing renewable energies, while reducing the share of nuclear power to 50% of the electricity mix by 2050.
This changed in 2020 when this limitation was lifted and France announced a return to nuclear power. The program was therefore rewritten: the lifespan of current power plants would be extended to 60 years, or even beyond, and a "new nuclear plant program would be launched, including EPR2 reactors, and development of the problematic EPR reactor in Flamanville (cost, schedule delays). To date, it has been announced that three pairs of EPR2s will be constructed on the sites of the

existing power plants in Penly (Seine-Maritime), Gravelines (Nord) and Bugey (Ain). This change has not yet been integrated into France's energy-climate strategy, which is slowly being formalized, "despite legislative obligations", according to the High Council on Climate (HCC). In its draft National Energy and Climate Plan for 2030, submitted to the European Commission, France does, however, propose a target of 58% carbon-free energy in its energy mix, without distinguishing between nuclear and renewable energies. The EPR2 reactor is currently in the "design" stage. In Penly, the first prototype is not expected to be ready before 2035. For its part, the French Nuclear Safety Authority has stressed that extending the lifespan of current power plants beyond 40 years requires an "exceptional volume of work". The nuclear industry's most optimistic proposal is to have a fleet with a capacity of 50 gigawatts (GW) by 2050 compared to more than 60 GW today. This would involve: 14 new EPR2 reactors (most of them to be ready after 2040), 4 GW of SMR plants dubbed "small nuclear plants" (fission reactors with reduced power of up to 300 MW, mass produced and then installed on site) If this proposal is successful, nuclear power would account for around half of France's electricity by 2050, according to RTE, which has developed more conservative scenarios (10 to 14 EPR2s, no SMRs industrially developed in France), without extending the lifespan of reactors beyond 60 years. Nuclear power would thus account for 30 to 40 GW by 2050, or between 26% and 36% of the electricity produced.

NZAM
The Net Zero Asset Managers Initiative is an international group of asset managers committed to supporting the goal of net zero greenhouse gas emissions by 2050, and investing in activities aligned with Net Zero emission trajectories.
(Source: netzeroassetmanagers.org)

NZAOA
The Net Zero Asset Owner Alliance is an alliance of institutional investors whose members have committed to owning "net zero" investment portfolios by 2050.
(Source: unepfi.org/net-zero-alliance)

NZBA
The Net Zero Banking Alliance is an alliance of banks that support the implementation of decarbonization strategies by providing financial



STÉPHANIE LECOCQ / REUTERS

institutions with a framework and consistent guidelines. In 2024, it is made up of more than 140 banks from 44 countries, with total assets of more than $74 trillion, representing 41% of the world's assets.
(Source: unepfi.org/net-zero-banking/)

NZE 2050
The IEA's NZE by 2050 scenario provides a roadmap and a set of recommendations for achieving the goal of net zero emissions globally by 2050 and limiting global warming to 1.5°C.

O

OCDE
The Organization for Economic Co-operation and Development is an international economic research organization, representing around thirty countries, working to implement public policies that promote prosperity, equal opportunities and well-being for all. It provides data, analyses, and advice on public policy, economics and development to the leaders of its member states.
(Source: oecd.org/fr/apropos;lejdd.fr/International/quest-ce-que-locde-4056006)

OIL
At present, nearly 40% of France's final energy consumption depends on oil, whose derivatives (kerosene, gasoline, diesel, fuel oil, etc.) represent a virtual monopoly in transport, apart from in the railway sector: there are around 1.7 million electric vehicles in circulation in 2024 out of a total fleet of around 35 million. According to INSEE, France imported 41 million tons of crude oil in 2022. The United States is now its leading supplier, with 15% of the total. However, while only 5.2% came from Russia (compared to 8.8% in 2021), 19.3% was sourced from countries of the former USSR, with Kazakhstan topping the list. This is more than the imports from Saudi Arabia (8.1% in 2020), Nigeria (10%), Algeria (8.9%), Libya (6.3%) and the North Sea (10.8%).
(Sources: www.avere-france.org/balance_2023/; www.statistiques.developpement-durable.gouv.fr/edition-numerique/chiffres-cles-energie-2023/pdf/pages/donnees-cles.pdf;www.insee.fr/fr/statistiques/2119697)

OPERATING FOOTPRINT OF CRÉDIT AGRICOLE
Operating footprint means all of Crédit Agricole's greenhouse gas emissions or the carbon footprint linked to Crédit Agricole's own activities, i.e. the Group's day-to-day operations (heating of buildings, electricity, business travel, etc.). It does not include financed, insured or invested emissions.

P

PCAF
PCAF stands for Partnership for Carbon Accounting Financials. This is a global initiative to measure and publish figures for greenhouse gas emissions associated with financial activities.

POSEIDON PRINCIPLES
The Poseidon Principles provide a quantitative assessment framework for responsible financing in the shipping sector. Crédit Agricole has been a signatory since 2019. This framework aims to promote a common approach to measuring and monitoring the carbon impact of shipping activities and thus contribute to the objectives of the International Maritime Organization (IMO) to reduce greenhouse gas (GHG) emissions from the shipping sector by 50% by 2050 compared to 2008. This initiative is led by the main shipping finance institutions, to support the transition to low-carbon shipping.
(Sources: armateursdefrance.org; glossaire-international.com)

PSI
Launched at the 2012 United Nations Conference on Sustainable Development, the Principles for Sustainable Insurance serve as a global framework for the insurance industry to address environmental, social and governance (ESG) risks and opportunities. The PSI is the largest collaborative initiative between the UN and the insurance industry.
(Source: unepfi.org/insurance)

PRB
With over 300 signatory banks representing almost half of the global banking industry, the UN Principles for Responsible Banking constitute the first global framework for sustainable banking. These Principles require banks to take steps to align their core strategy, decision-making, lending and investments with the United Nations Sustainable Development Goals and international agreements such as the Paris Climate Agreement.
(Source: unepfi.org)

PRI
Adopted by the United Nations in 2006, the six Principles for Responsible Investment (PRI), of which there are six, are designed for investors who want to incorporate environmental, social and governance (ESG) issues into their investment portfolio management.
(Source: unpri.org/about-us/about-the-pri)

R

RESPONSIBLE FINANCE
Responsible finance or SRI (Socially Responsible Investment) covers all initiatives and regulations aimed at promoting the financing of so-called socially responsible projects or investments (SRI). Responsible finance is linked to sustainable finance. Responsible finance is based on investing savings in projects that incorporate financial, social and environmental performance.

ROCKY MOUNTAIN INSTITUTE
The Rocky Mountain Institute is a global non-profit organization made up of experts from all disciplines, who are working to supercharge the transition to clean energy and improve lives. Its research is focused on transforming global consumption to create a low-carbon, clean, prosperous and secure future.

RTE
The Electricity Transmission Network is the high voltage electricity transmission network operator in mainland France. Its mission is to provide everyone with access to an economical, safe and clean electricity supply.

S

SBTI
The Science-Based Target Initiative provides recommendations and long-term GHG emission reduction targets, aligned with the level of decarbonization required to achieve the Paris Agreement objective and to limit global warming to 1.5°C by the end of the century.

SCIENTIFIC COMMITTEE
The Scientific Committee is a multidisciplinary body of Crédit Agricole made up of ten external members, who are recognized experts in climate and environmental issues (academic partners or individuals), which meets on a quarterly basis. Its mission is to shed light, through the specialist expertise of each member, on issues related to the implementation of its Societal Project, and to make strategic recommendations to the Group's Societal Project Committee.

SCOPES 1, 2 AND 3
Scopes 1, 2 and 3 constitute an international standard established by the GHG Protocol for mapping the greenhouse gas emissions of an organization into three main categories, based on their nature and origin. This standard was created in 1998 to help organizations conduct their carbon assessments, by identifying the main sources of direct and indirect emissions.

SCOPE 1
Covers all of the organization's direct emissions. It is divided into two categories: emissions linked to equipment and facilities, and emissions linked to fuel consumed by company vehicles.

SCOPE 2
Covers all indirect emissions associated with the production of electricity, heat or steam imported for the organization's activities. These emissions depend on the energy source used (coal, gas, renewable energies, etc.). The more carbon-intensive the energy used, the higher the Scope 2 emissions (e.g. with electricity in Poland being largely produced from coal, the associated emissions are much higher than in France, where electricity is mainly produced from low-carbon energies).

SCOPE 3
Covers all other emissions, i.e. indirect and direct emissions from the organization's various stakeholders, its value chain upstream and downstream of its operations and not included in

Amory Lovins, co- founder of the Rocky Mountain Institute, eating a banana grown in the solar-powered greenhouse of his Colorado home.

BEN STECHSCHULTE / REDUX / REA

Scopes 1 and 2. Upstream of an organization's value chain, this mainly concerns emissions from suppliers (business travel, transport of goods and distribution, capital assets, etc.); downstream emissions are linked to the use of products and services and their end of life (transport of goods and services, end of life of products sold, etc.).

SCOPE 3 CATEGORY 15

Scope 3 Category 15 relates to investments and includes Scope 3 financed emissions associated with the company's investments during the reporting year and not included in Scopes 1 and 2. This category applies to investors and companies that provide financial services.
(Sources: ghgprotocol.org/sites/default/files/standards_supporting/Chapter15.pdf; epa.gov/climateleadership/Scope-3-inventory-guidance)

ENERGY SUFFICIENCY

While often playing second fiddle to energy efficiency, energy sufficiency is nevertheless an essential pillar in scenarios for achieving carbon neutrality. The NégaWatt association has estimated its potential for reducing energy consumption at around 28% by 2050, while maintaining a "happy and friendly" society. By combining this with energy efficiency measures (electrification of uses, progress in capital goods, renovation of buildings), Ademe has developed a "frugal generation" scenario, where energy consumption is cut in half by 2050 compared to 2015. This scenario partly relies on regulation or rationing via quotas, which will require information and compensation initiatives in order to be accepted. Opting for energy sufficiency also involves a real need for equity, as the responsibility for reducing consumption should not be borne by the poorest groups in society.
(Sources: negawatt.org/IMG/pdf/sobriete-scenario-negawatt_brochure-12pages_web.pdf; www.ademe.fr/les-futurs-en-transition/les-scenarios/)

SOCIETAL PROJECT

The Crédit Agricole Societal Project, launched on December 1, 2021, is one of the three key elements of the Crédit Agricole Group project, alongside the Customer Project and the Human Project. It is based on three aims: to be a key player in the energy transition, to accelerate the development of sustainable agri-cultural and food practices, and to contribute to a more inclusive and supportive society. It is broken down into ten collective commitments that have been incorporated into all of Crédit Agricole's activities and business lines.

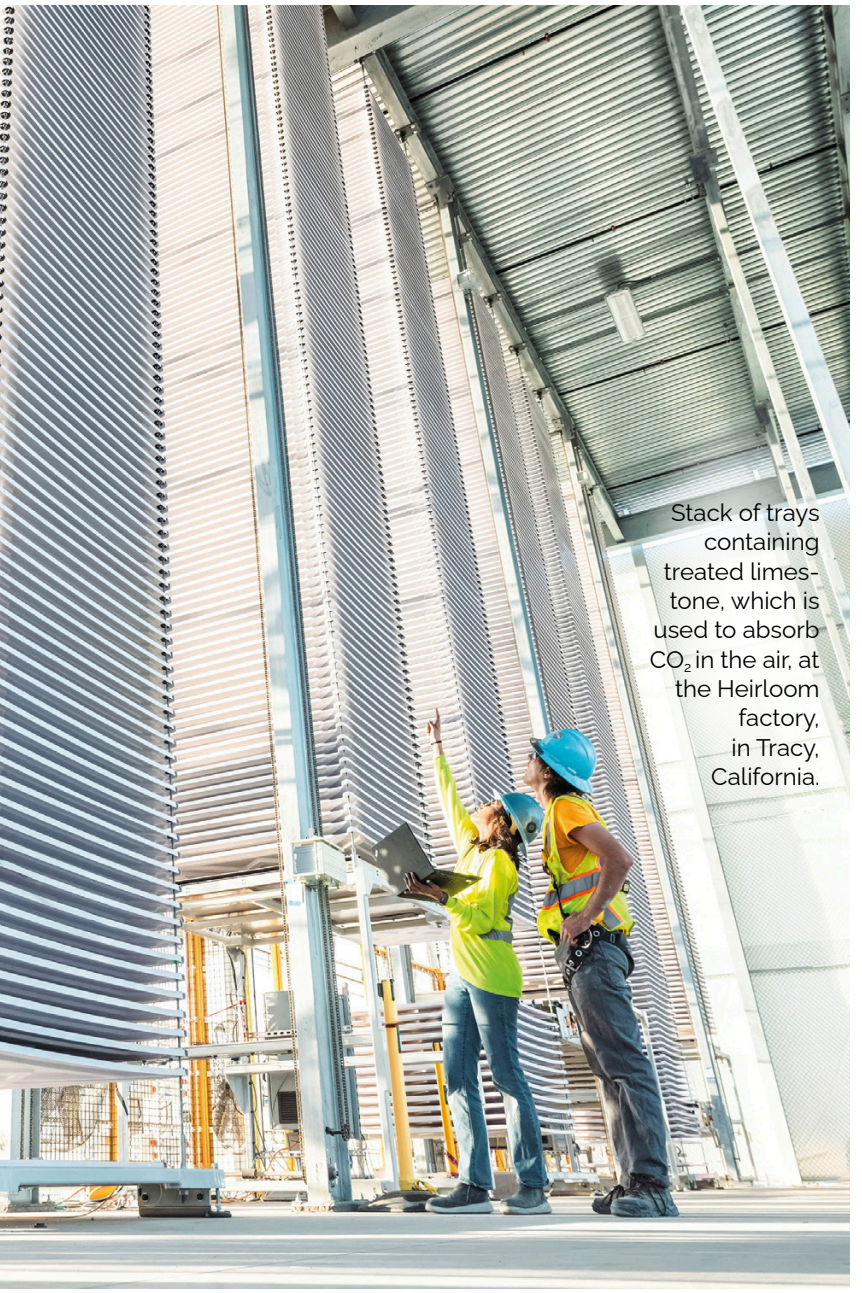
SOLAR POWER

There are two main types of solar energy: photovoltaic solar power to produce electricity, and solar thermal power which uses solar collectors to heat domestic water and, potentially, to heat buildings. In France, photovoltaic solar energy represented an installed capacity of 19 GW in September 2023, close to the target objective (20 GW). The target for 2028 is 35-44 GW. By 2050, the scenarios predict at least 70 GW, and potentially over 200 GW of photovoltaic solar power, which would mean a tenfold increase! Accounting for around 4.4% of electricity production in 2023, this energy source could represent between 13 and 36% of the electricity mix, with storage in large batteries if necessary. With regard to solar thermal power, this energy source was developed in France from the 2000s, before the sector collapsed, disadvantaged by thermal regulations and competition from gas and electricity, as well as heat pumps. While widely used overseas, in mainland France, it only accounted for 1,300 gigawatt-hours (GWh) of heat production in 2022–for 2.4 million m2 of solar collectors–mainly for domestic hot water, or 0.2% of the final heat consumption. However, according to Ademe, this energy source could be used to effectively replace fuel oil and gas, while boosting France's energy independence. In 2022, 67,000 m2 of solar collectors were installed (compared to 107,000 m2 overseas). The target for 2028: up to 350,000 m^2 per year in the building sector, with 70% in the private housing sector. However, there are no plans for mass development of this zero-carbon energy source in the current scenarios for 2050, even if one of Ademe's hypotheses suggests that 45% of private houses could be equipped with solar panels by then.

(Sources: www.statistiques.developpement-durable.gouv.fr/tableau-de-bord-solaire-photovoltaique-troisieme-trimestre-2023-0; assets. rte- france.com/prod/public/2021-10/Futurs-Energetiques-2050-principaux-results_0.pdf;www.ademe.fr/les-futurs-en-transition/les-scenarios/ https://www.syndicat-energies-renouvelables.fr/wp-content/uploads/basedoc/panorama_chaleur_2023_light.pdf)

SUSTAINABLE ACTIVITIES

The European Taxonomy regulation of June 18, 2020 sets out a list of activities considered sustainable by the European Union. These are economic activities that contribute to an environmental objective, while not having a negative impact on any of the other environmental targets set out in this regulation and complying with certain minimum social guarantees. These guarantees play a role in mitigation or adaptation to global warming, the transition to a circular economy, the prevention and reduction of pollution, the protection and restoration of biodiversity and ecosystems and the



Stack of trays containing treated limestone, which is used to absorb CO_2 in the air, at the Heirloom factory, in Tracy, California.

REUTERS

sustainable use and protection of aquatic and marine resources.

T
TRANSPORT

Ahead of the agricultural and industrial sectors, building use and even energy transformation, transport in France emitted more than 130 million tons of CO_2 in 2022. This sector accounts for 32% of the country's greenhouse gas emissions. Heavily dependent on oil, this sector must be decarbonized by 2050 if France is to meet its climate objectives: reduced car use, increased use of carpooling, reduced fuel consumption for cars, more remote working, more travel on foot,and by bike, as well as greater use of public transport, and the replacement of gasoline and diesel with carbon-free electricity. The RTE scenarios estimate that electricity consumption will be around 100 TWh in 2050 (compared to 15 today) to meet the requirements of these services. In addition, "specific actions aimed at limiting the need for critical resources will be required: reducing the number of vehicles, limiting the size of batteries, developing new-generation batteries that use less metals, such as cobalt, etc." As with its other climate objectives, France is behind schedule. A study by the Carbone 4 firm has shown that while the share of low-emission vehicles is supposed to represent 15% of the total fleet by 2030, the systems in place will only be able to finance 3% of this fleet.

There is also a lack of resources for cycling, requiring a fourfold increase over the next decade, and for developing rail transport, which must account for 20% by 2030.

(Sources: www.notre-environnement.gouv.fr/actualites/breves/article/quel- est-le-level-des-emissions-de-gaz-a-effet-de-serre-de-nos-trans-ports; assets.rte- france.com/prod/public/2022-06/FE2050%20_Rapport%20complet_3 pdf; https://assets.rte-france.com/prod/public/2021-10/Futurs-Energetiques-2050-principaux-resultats_0.pdf).

V
VOLUNTARY CONTRIBUTION TO CARBON NEUTRALITY

Contribution to carbon neutrality refers to reducing one's own emissions to levels compatible with the Paris Agreement objective, while financing carbon reduction and sequestration projects, in particular, through the purchase of carbon credits.

(Source: carbone4.com/neditespluscompensation-de-compensation-a-contribution) ■

METHODOLOGY BY SECTOR

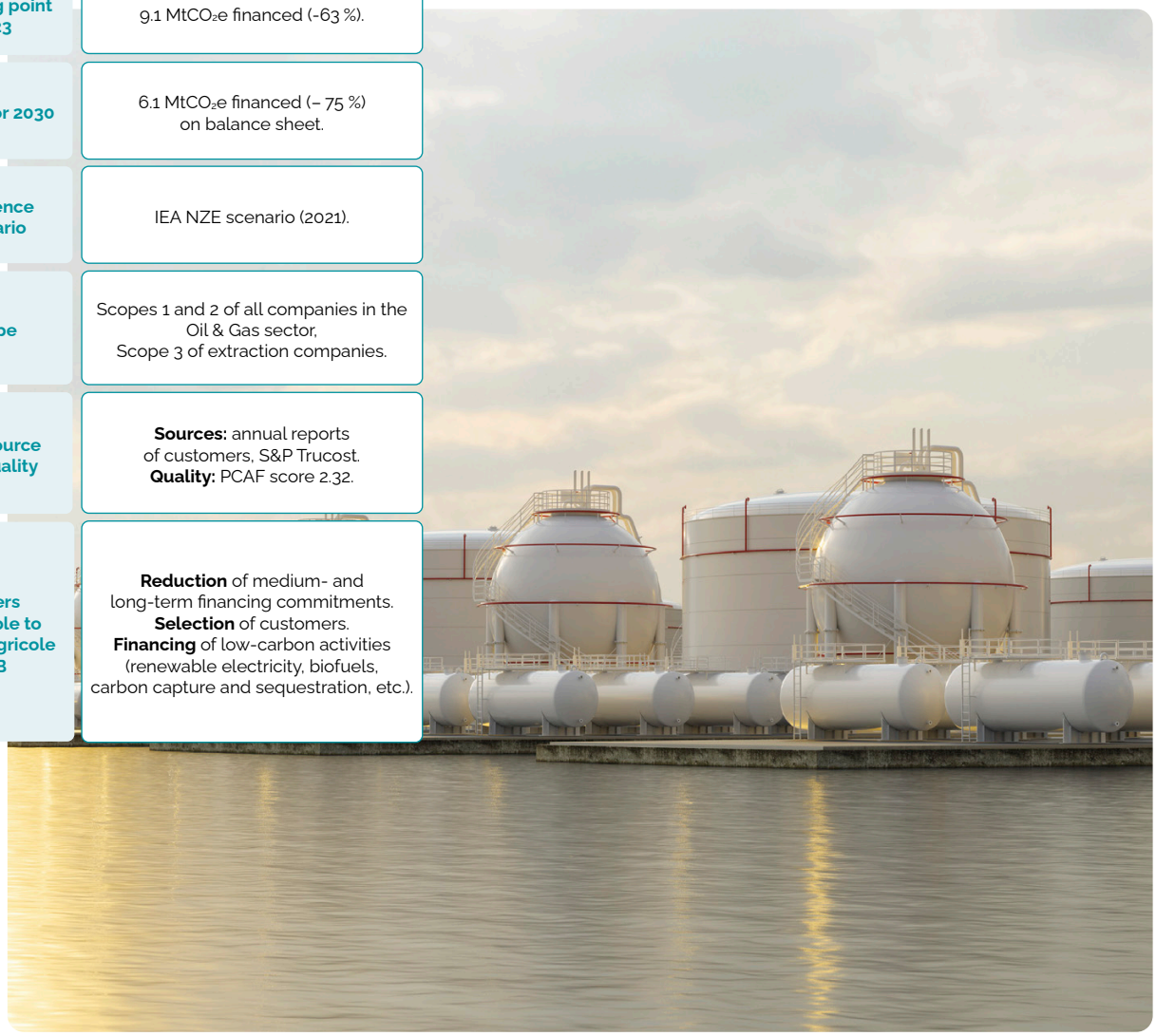
CLOTILDE ARNAUD / SUNAGRI

OIL & GAS

ENTITY : CRÉDIT AGRICOLE CIB

1 - A SUMMARY OF THE SECTOR

Financing commitments relating to 2023	10 Bn$ (MLT loans on balance sheet).
Starting point 2020	24.3 $MtCO_2e$ financed (balance sheet financing basis).
Crossing point 2023	9.1 $MtCO_2e$ financed (-63 %).
Target for 2030	6.1 $MtCO_2e$ financed (– 75 %) on balance sheet.
Reference scenario	IEA NZE scenario (2021).
Scope	Scopes 1 and 2 of all companies in the Oil & Gas sector, Scope 3 of extraction companies.
Date source and quality	**Sources:** annual reports of customers, S&P Trucost. **Quality:** PCAF score 2.32.
Levers available to Crédit Agricole CIB	**Reduction** of medium- and long-term financing commitments. **Selection** of customers. **Financing** of low-carbon activities (renewable electricity, biofuels, carbon capture and sequestration, etc.).



ISTOCK

1 - B SCOPE OF ACTIVITY AND GREENHOUSE GASES

SECTOR EMISSIONS

80 to 90% of greenhouse gases from the Oil [1] & Gas sector are emitted by other consuming sectors downstream of the value chain for hydrocarbon distribution: when oil is burned in engines and when gas is used in boilers or industrial furnaces. In other words, category 11 of Scope 3, "Use of products sold", is the main source of emissions in the carbon footprint of oil and gas companies, whatever their profile: integrated or specialized players. The sector's remaining material emissions come from its operations (Scopes 1 and 2): firstly, the emissions associated with energy consumption (in the form of fuel or electricity) for extracting hydrocarbons from the ground, as well as transporting, processing, refining and distributing them, and, secondly, emissions linked to extracted natural gas, when it escapes via gas pipeline or storage leaks (CH_4), or when it is directly vented (CH_4) or flared (CO_2) during oil extraction.

SCOPE SELECTED

Given the materiality of Scope 3 for our customers active in production and the CO_2 and methane emissions in Scopes 1 and 2 across the entire value chain, our financed emissions and reduction commitments include Scopes 1 and 2 and Scope 3 for combustion, in CO_2e (unit providing an aggregate of CO_2 and CH_4).

SCOPES 1 AND 2

As the transition must be a collective effort involving all sector stakeholders, we have included Scopes 1 and 2 for the entire oil and gas value chain: integrated multinational and national oil companies as well as independent companies working in exploration and production (E&P), refining, transport & storage, distribution, as well as all specialist service providers in the sector. (EPC contractors, offshore engineering firms, etc.).

SCOPE 3

We have chosen to apply Scope 3 to extraction companies only (integrated companies, national companies and independent E&P players), to avoid counting emissions twice. The oil that passes through the hands of companies specializing in transport or refining is the same oil that was extracted upstream by E&P players. Counting the Scope 3 combustion of the same barrel several times, which would have been extracted by producer A, transported by actor B and refined by actor C would therefore result in our financed footprint being overestimated. As it is currently not possible to precisely calculate the amount of barrels that are exchanged between each actor in our portfolio, at each stage of the value chain (whether between them, or with actors outside our portfolio), the best way to avoid counting them twice is to calculate Scope 3 combustion based on the volumes passing through a given stage of the value chain: this volume data is taken from the original source, because upstream production volumes are better documented, and allow us to trace emissions to their primary source.

1 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

CHOICE OF METRICS

We have chosen to measure the reduction of our financed emissions in absolute value and not in intensity.

We chose the metric of absolute value based on the levers that are available to us and to our customers, enabling them to decarbonize their activities and their products.

As aforementioned, 80 to 90% of the carbon footprint of oil and gas companies is linked to the combustion of products sold downstream of the value chain[2]. However, oil companies have very little influence on Scope 3 emissions from the combustion of fossil hydrocarbons: a barrel of oil or a m3 of natural gas burned for energy use and without carbon capture will emit as much carbon in 2050 as in 2020. The main levers for reducing the intensity of Scope 3 are based on trends that are outside the influence of the companies in the sector: they relate to an increase in other sectors which consume hydrocarbons downstream in the value chain, the use of carbon-free energy sources (electrification of uses), their energy efficiency or their share of non-energy use (e.g.: production of plastics and basic chemical components, lubricants and rubber, or asphalt for oil, production of hydrogen, fertilizer or methanol for natural gas) and to the use of carbon capture and sequestration (CCS) in factories and power plants that consume natural gas.

(1)Carbon Disclosure Project (2018). Beyond the cycle: Which oil and gas companies are ready for the low-carbon transition?
(2) Carbone 4 Finance (2020). The Oil Industry: Is it up to the Challenge?

Thus, the Scope 3 decarbonization of our customers will mainly be based on an absolute reduction in volumes, and to a lesser extent, on a reduction in the intensity of Scope 3: the most effective lever for decarbonizing a barrel of oil is by avoiding its consumption in the first place.

The fossil fuel sector is the only economic sector where production volumes decrease as of this decade in the IEA's NZE scenario while all other sectors continue to grow (TWh of electricity, pkm of travel, m² of building floor space, tons of steel, etc.). That is why it is the only sector where we are committed to reducing absolute emissions and not carbon intensity.

At the same time, we aim to support and promote the efforts made by our customers in the sector to decarbonize their footprint. Although hydrocarbons are gradually being substituted, they will continue to play an important role over the coming decades: it is therefore fundamental that, for the quantities that continue to be extracted, the methods applied are as respectful as possible to the climate, the environment and local communities.

CALCULATION OF FINANCED EMISSIONS

As with the other sectors, we have used the PCAF methodology for calculating financed emissions based on our medium- and long-term financing (balance sheet exposure).

For emissions, a differentiated calculation has been used for companies involved in extraction activities and those specializing in more downstream phases of the value chain (transport, refining, distribution or services):

- **For companies involved in extraction activities** (integrated companies, national companies or independent upstream producers), we systematically collect their oil and gas production volume data (in barrels of oil equivalent), either from their own communications or via external data providers.

- **For Scope 1 and 2 emissions,** we use the emission data reported by the company (either via the company or via external aggregators such as S&P Trucost). If these emissions have not been communicated or do not seem to reflect reality, we estimate them based on volumes (boe): we multiply the volumes of crude oil and natural gas sold, or in the case of certain integrated companies, the average mix of products leaving the refinery, by an upstream emission factor ($kgCO_2e$/boe) taken from the Ademe Carbon Database.

- **Finally, for Scope 3 emissions,** the data communicated by companies is too varied, with some not yet including category 11 of Scope 3.
Therefore, we have not used the Scope 3 emissions reported by companies: they have been systematically estimated based on production volumes, multiplied by emission factors taken from scientific reference databases (Ademe, IEA) to ensure that combustion related emissions are taken into account.

- **For companies not involved in extraction activities** (pipeline transport, refiners, distributors, etc. data on the volume of oil and gas transported or refined is not always published. For Scope 1 and 2 emissions, we use the emissions reported by the company, and if this data is not available, we apply an average tCO_2e/M€ ratio in relation to the company's value, taken from other customers in our portfolio that are part of the same value chain.

For Enterprise Value Including Cash (EVIC), i.e. the value of the company including cash, three different calculations are performed:

- **For listed oil and natural gas producing companies,** we use data provided by Standard & Poor's – the market value of equity if available, or if not, the book value as recommended by PCAF and the book value of debt without deducting from cash.

- **For unlisted oil and natural gas producing companies,** we use an EVIC model for a more consistent assessment of the attribution factor - this EVIC model is calculated by multiplying the production volumes of these companies (in barrels of oil equivalent) by the ratio between the average value per barrel ($/bbl), which is based on a benchmark of listed producing companies and the share that production represents in EVIC.

- **For other companies** (transport specialists, refining and trading companies and service providers), we either use direct debt and equity data, provided by S&P, or average EVIC/turnover ratios by value chain.

STARTING BASIS 2020

Our credit exposure (on balance sheet and with maturity greater than 1 year) to the entire Oil & Gas value chain was €15.3 billion in 2020. By applying the PCAF methodology to this exposure, we evaluated our starting basis for financed emissions at 24.3 $MtCO_2e$, including 4.8 $MtCO_2e$ for our customers' Scope 1 and 2 emissions, and 19.5 $MtCO_2e$ for their Scope 3 combustion. Given our systematic use of emissions or production volumes published by companies, our PCAF quality score for most of our customers is between 1 and 3, with an average of 2.90 (weighted by exposure) or 2.32 (weighted by the emissions financed):

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PCAF Quality Score

PCAF SCORE	Description	Exposure	Emissions
1	Actual Scope 1 and 2 emissions	38%	40%
2	Emissions calculated via volumes of customer consumption	-	-
3	Emissions calculated via volumes of customer production	28%	54%
4	Emissions estimated with a $CO_2e/€$ ratio of customer turnover	-	-
5	Emissions estimated with a $CO_2e/€$ ratio of exposure	34%	6%
Weighted PCAF score of our portfolio		**2.90**	**2.32**

Our PCAF score already compares favorably to the industry average in this sector, and our teams are continuously working to improve it, in particular by developing tools and procedures to industrialize the collection of data on emissions and the operation volumes of our customers.

1 - D SCENARIO AND TARGET

As with other sectors, the reference scenario for our Oil & Gas objective is the IEA's NZE 2050 pathway published in 2021. This normative scenario estimates that limiting global warming to less than 1.5°C between now and 2100 requires a rapid reduction of the volumes consumed in the Oil & Gas sector.

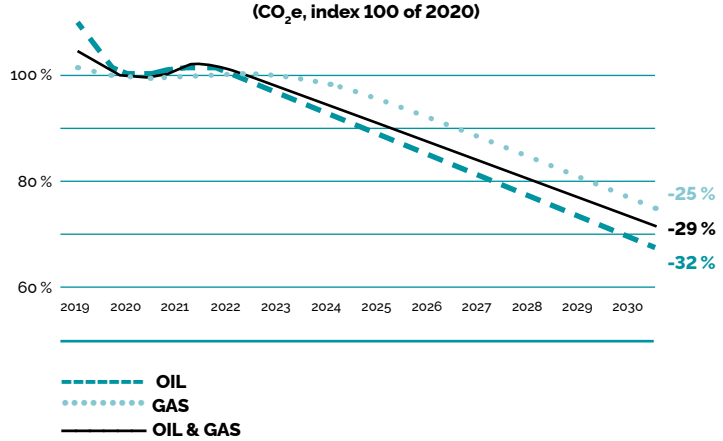
While this reduction relies in part on making major progress in terms of the operational efficiency of companies in the sector, first and foremost, it depends on major transformations downstream in the sectors that consume oil and gas: transport, construction, industry, and to a lesser extent agriculture. These transformations must apply numerous levers simultaneously to be successful: widespread electrification of uses, decarbonization of electricity, energy efficiency and sufficiency, technological progress, public policies, etc. Our sectoral commitments for electricity production, and the automotive and commercial real estate sectors aim to support this systemic transition.
According to the IEA's NZE scenario, if started early enough, this transition would help reduce oil production in an almost linear fashion between now and 2050: **primary energy linked to oil would be 21% lower in 2030 than in 2020, and 76% lower in 2050.** Associated emissions would fall even faster thanks to efficiency gains in the sector's operations (phase out of flaring and venting, major reduction in methane leaks).
A growing share of the remaining oil would be used for non-energy uses for which carbon would be stored in materials and not released into the atmosphere (plastics, lubricants, asphalt, etc.): **CO_2e emissions linked to oil would decrease by 32% between 2020 and 2030 and by more than 90% between 2020 and 2050.**

Gas production would continue to grow until the mid-2020s before decreasing rapidly from 2026 onwards. In 2030, global production of natural gas (as primary energy) would be 6% lower than in 2020. In 2050, it would be 56% lower than in 2020. As with oil, emissions linked to natural gas would decrease even faster than the volumes produced because of the sector's increased operational efficiency, the growing share of non-energy uses, as well as the rapid deployment of carbon capture and sequestration techniques (especially after 2030). CO_2e emissions linked to natural gas would thus be reduced by 25% between 2020 and 2030, and by almost 95% between 2020 and 2050.

Overall, total CO_2e emissions linked to oil and gas would decrease by 29% between 2020 and 2030, according to the IEA's NZE scenario.
In December 2023, we revised our 2050 reduction target for emissions financed in the sector, from 30% to 75%, in line with the Group's increased efforts with regard to its climate commitments.
In particular, this revised target reflects the halt in financing of new hydrocarbon extraction projects, the cessation of corporate financing for independent producers and increased selectivity of corporate financing in favor of hydrocarbon producers, taking into account their commitment to the energy transition. We have set an objective to reduce our total financed emissions (Scopes 1, 2 and 3) in the Oil & Gas sector by 75% between 2020 and 2030, going beyond the recommendations of the IEA's NZE scenario. Our footprint in the sector would thus decrease from 24.3 $MtCO_2$e to 6.1 $MtCO_2$e over ten years, based on three main levers:
1. Stopping medium and long-term financing directly for hydrocarbon extraction.
2. Selecting and supporting customers that are committed to the transition.
3. Supporting low-carbon diversification.

REDUCE OUR TOTAL FINANCED EMISSIONS BY 75% BETWEEN 2020 AND 2030 (SCOPES 1, 2 ET 3)

Global emissions according to the IEA NZE 2021 scenario (CO_2e, index 100 of 2020)



1 - E LEVERS AND ACTION PLAN

Our strategy in the Oil & Natural Gas sector is based on 3 major levers

1. Stop medium and long-term financing directly for hydrocarbon extraction

In December, we announced that we would stop financing new hydrocarbon extraction projects (including infrastructure specifically for this purpose) as well as corporate financing of independent producers, whose activity is solely focused on exploration and production of oil and gas. We no longer accept mandates on bond issues from companies involved in the exploration or production of fossil hydrocarbons, unless they relate to green bonds or sustainability-linked bonds.

2. Select and support customers committed to the transition

The transition cannot take place unless large producers develop low-carbon operations and make a firm commitment to reduce the carbon footprint of their traditional operations and apply high ESG standards. While overall hydrocarbon production must decrease in line with the drop in demand, large diversified producers will continue to play a key role in the transition of our societies, whether this involves supporting the development of alternative solutions, offering a just transition to developing countries, or maintaining essential services linked to non-energy uses (e.g.: plastics, lubricants and fertilizers). It is crucial that the companies which continue to extract these energies over the coming decades conduct these operations in the most respectful way possible for the climate, the environment and local communities. We will therefore select beneficiaries of corporate funding on a case-by-case basis, taking into account the extent of their commitment to the transition.

3. Support low-carbon diversification. By mobilizing their expertise and resources, oil and gas companies can actively contribute to transforming not only their value chain but also those of related energy and heavy industry sub-sectors, thus building a more diversified, more resilient and more attractive low-carbon business model.
In line with our desire to best support our customers throughout the transition, we will work to direct an increasing share of our financing towards low-carbon activities: bioenergy, carbon capture, use and storage, renewable electricity production, hydrogen, etc.

In line with these levers, we have therefore revised our reduction target for our financed emissions, from 30% to 75% by 2030 compared to 2020.

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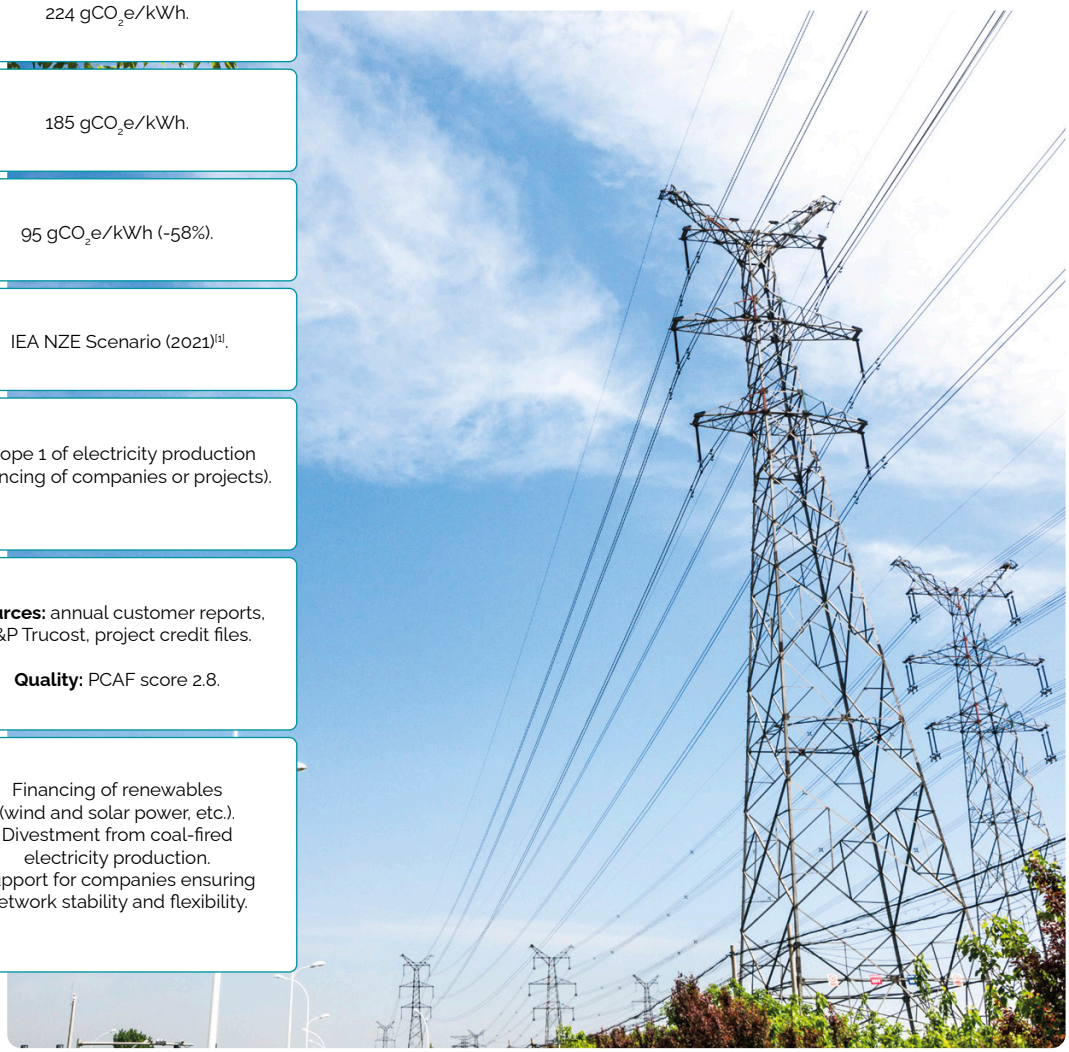
ELECTRICITY PRODUCTION

ENTITIES : CRÉDIT AGRICOLE CIB, CRÉDIT AGRICOLE TRANSITIONS & ÉNERGIES, CRÉDIT AGRICOLE LEASING & FACTORING

2 - A SUMMARY OF THE SECTOR

Financing commitments relating to 2023	€25 Bn (on-balance sheet and off-balance sheet MLT loans).
Starting point 2020	224 gCO_2e/kWh.
Crossing point 2023	185 gCO_2e/kWh.
Target for 2030	95 gCO_2e/kWh (-58%).
Reference scenario	IEA NZE Scenario (2021)[1].
Scope	Scope 1 of electricity production (financing of companies or projects).
Source and quality of data	**Sources:** annual customer reports, S&P Trucost, project credit files. **Quality:** PCAF score 2.8.
Levers available to Crédit Agricole CIB	Financing of renewables (wind and solar power, etc.). Divestment from coal-fired electricity production. Support for companies ensuring network stability and flexibility.



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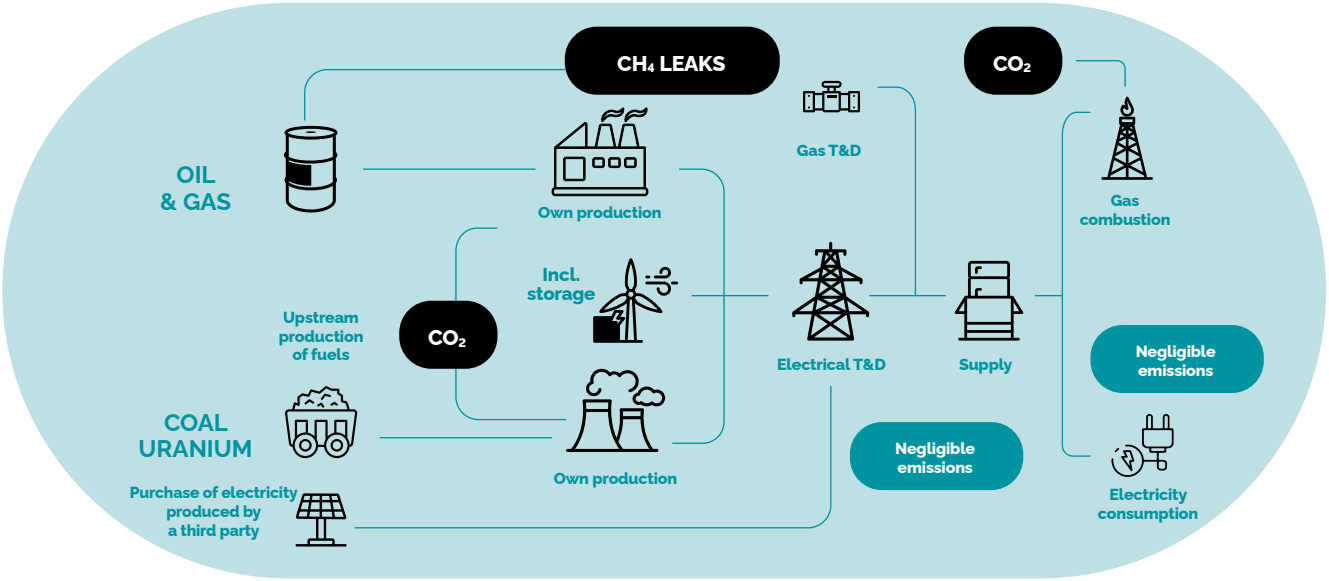
(1) The IEA's NZ scenario has since been revised upwards twice with crossing points at 165 gCO_2e/kWh in 2022 and 186 gCO_2e/kWh in 2023. The IEA scenario takes into account economic and physical realities. We will reflect on how to maintain a trajectory aligned with the IEA's initial NZ scenario from 2021 and on the need to adjust our trajectory to the latest recommendations.

2 - B SCOPE OF ACTIVITY AND GREENHOUSE GAS

Players in the electricity sector are positioned in different segments of the value chain: production, renewables, distribution and marketing. Integrated players vertically cover the entire chain while specialized players are positioned on a value link, for example independent producers, energy grid managers or suppliers. These companies may also be involved in the distribution of both electricity and natural gas.



Built-in Utilities	Scope 3	Scope 1&2	Scope 3
Independent producers	Scope 3	Scope 1&2	Scope 3
T&D Companies	Scope 3	Scope 1&2	Scope 3
Fournisseurs	Scope 3	Scope 1&2	Scope 3

With regard to our approach to this sector, our electricity production target is focused on the electron value chain rather than the gas molecule value chain, since gas distribution is included in our commitment for the Oil & Natural Gas sector. Within the electricity value chain, emissions are mainly generated by producing electricity from fossil fuels: these emissions (Scope 1 type) account for almost all of those (>95%) of integrated companies and independent producers.

Scope 2 emissions of companies in the sector are negligible, because the electricity they consume is produced by them: therefore, Scope 2 emissions of electricity producers have already been counted in their Scope 1 emissions.

Finally, Scope 3 emissions of electricity companies typically come from two key sources: upstream fuels, and electricity production by third parties.

Upstream fuel relates to emissions from extraction, processing, storage and transportation of fuel upstream of power plants (whether coal, natural gas, fuel oil or uranium). These emissions are lower than those for Scope 1 production, and are covered (for fossil fuels) by our commitments in the Oil, Natural Gas and Coal sectors. For these reasons, and in accordance with the recommendations of the SBTi, PCAF and NZBA standards, Scope 3 emissions upstream of fuel extraction are not included in our analysis of the Electricity sector.

To limit double counting of this sector's emissions, we have not included our customers' Scope 3 emissions linked to the production of electricity that they buy and resell but do not produce: these emissions are covered in Scope 1 of the independent producers who sold this electricity to them and would otherwise be counted twice. Our analysis and commitments for the electricity sector are therefore focused on electricity production, whether generated by a major corporation or by a professional or farmer who has installed solar panels, and either financed through a business loan or project financing. We calculate the Scope 1 emissions of this electricity production, measured in gCO_2e/kWh. The CO_2 equivalent metric includes all greenhouse gases (but the vast majority of GHGs emitted during electricity production are CO_2).

These emissions are highest for coal-fired production (around 1,000 gCO_2e/kWh), followed by fuel oil (~750-800 gCO_2e/kWh), and then natural gas (between 300 and 600 gCO_2e/kWh depending on the technology used). Emissions are zero for renewable energies (hydroelectricity, wind and solar power, etc.) and nuclear power, because these are direct emissions emitted during a year of production (and not emissions relating to life cycles, which take into account the construction and maintenance of power plants).

2 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

CHOICE OF METRICS

The carbon metric chosen for the sector is based on measuring emission intensity (gCO_2e/kWh), in order to manage the financed electricity mix. We also monitor absolute emissions for information purposes. Our results for this metric could be improved by divesting from both fossil fuel-based electricity production projects and from producers with a significant share of carbon production, as well as by financing more renewable electricity projects. This metric can thus be used to measure the trajectory of a growing sector. Scope 1 emissions have been taken into account, which account for over 95% of electricity companies' Scope 1 and 2 activity.

CALCULATION OF FINANCED EMISSIONS

Carbon intensity and absolute emissions of our financed electricity production mix are calculated, as with other sectors, according to the PCAF methodology.
This involves collecting financial and physical data on our financing operations at both customer and project level:

- **As recommended by PCAF,** for corporate financing, we collect data on Enterprise Value Including Cash (EVIC), production volumes (GWh) by technology (nuclear, gas and wind, etc.) and, if available, published Scope 1 emissions ($MtCO_2e$) . EVIC is either directly calculated from equity data (market value if available, value accounting otherwise) and total debt provided by S&P, or estimated using average proxies for EVIC/sector turnover.

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Production data (GWh) either comes from external suppliers such as S&P Trucost, or is collected by our bankers from customers' annual reports, or - in certain cases such as for unlisted customers – it is recalculated using the installed capacity data (MW) published by companies (multiplied by load factor assumptions). If this data is not available, Scope 1 emissions are recalculated from production data.

◗ **For project financing,** we collect data on the total debt and equity of the project, its technology and installed capacity. The technology data is granular: for example, we differentiate between onshore and offshore wind power, open-cycle gas turbines and combined-cycle gas turbines, and even peaking power plants compared to more basic ones. This data is compiled in our credit reports and internal databases. It is thus possible to apply the theoretical load and emissions factors best suited to each type of project to calculate both the production volumes and the associated emissions.

The load and emission factors that we use when data on emissions or production data is not available are taken from the averages (global for Crédit Agricole CIB, French for our local banks in France) calculated by the IEA, IRENA and RTE. When, in rare cases, neither emissions, production nor capacity data is available, we use average ratios by technology (gas, solar, wind, etc.) of capacity costs (kW/€ of CAPEX) to calculate the installed capacity, which is then multiplied by the same load and emission factors as previously mentioned.

Therefore, depending on the information available, the following data can be calculated:

◗ **Production (GWh) = capacity (GW) x load factor (%) x 8,760 (h)**

◗ **Absolute emissions (tCO_2e) = production (GWh) x emission factor (gCO_2e/kWh)**

After collecting or calculating emission and production data for each customer and project, we then calculate two absolute values: our total financed emissions ($MtCO_2e$) and our total financed production (GWh). Financed production is calculated with the same PCAF formula as previously mentioned for emissions. At this stage, we can establish our financed electricity production mix, that is to say how much GWh we finance for each energy sector (nuclear, wind, gas, etc.).

The last step is to divide the two absolute values previously calculated: our total financed emissions divided by our total financed production, to obtain the overall weighted carbon intensity of our portfolio (gCO_2e/kWh). To calculate our baseline, we used the emissions factors for electricity production from RTE[1].

As a result of this dominant share of renewable energies in our financed electricity mix, as well as our support for nuclear companies, particularly in France, in 202, the total carbon intensity of our electricity production portfolio was 224 gCO_2e/kWh, 49% lower than the global average of 459 gCO_2e/kWh defined by the IEA (World Energy Outlook 2021).

The average intensity of our portfolio comes from the financing of 62 TWh, broken down as follows: 60% low-energy carbon (renewable energy or nuclear power) and 39% fossil fuels.

$$\text{Financed production} = \sum_{\text{customers or projects}} \left(\frac{\text{(Medium term commitment)}}{\text{(Customer's EVIC or project value)}} \times \text{Production of the customer or project} \right)$$

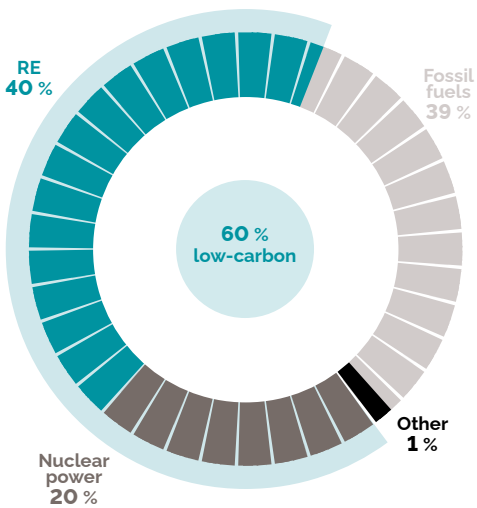
(1) RTE (2022) eCO_2 mix – CO_2 emissions per kWh of electricity generated in France.

2020 STARTING BASIS

Our credit exposure (drawn and undrawn, maturity of >1 year) with respect to loans to electricity-producing companies and our financing of electricity production projects, through Crédit Agricole CIB and CAT&E via Unifergie, amounted to €16.3 billion in 2020. Nearly 50% of this exposure relates to financing of renewable energies (mainly hydroelectricity, wind and solar power, but also biomass and geothermal energy) both directly via our project financing or indirectly via our loans to companies with renewable capacities.

In 2022

62 TWh financed



It should be noted that while renewable energies account for approximately 50% of our electricity production financing, their share in the financed TWh mix is slightly lower (around 40%) because the load factors (number of production hours compared to total hours in the year) of wind and solar power are lower than those of nuclear, gas and coal power plants. Their installation costs (in €/MW) are higher than that of fossil fuel power plants on average.

OUR EXPOSURE
(Crédit Agricole CIB, CAT&E/Unifergie)

€16,3 Bn

in 2020, nearly 50% of which relates to financing of renewable energies

MEASUREMENT QUALITY

Through substantial data collection work, we were able to collect real data (emissions, production or installed capacity) for our 2020 baseline on more than 90% of the electricity produced in our portfolio. According to the PCAF scoring system, which assigns a score of 1 to emissions published directly by companies, 3 to emissions calculated from physical production data (GWh or MW) and 5 to emissions estimated based on economic ratios (CO_2/€), our overall score is therefore 2.84 (weighted by exposure).

PCAF SCORE	Description	Exposure
1	Actual Scope 1 and 2 emissions.	28%
2	Emissions calculated based on customer consumption volumes.	-
3	Emissions calculated based on customer production volumes.	52%
4	Emissions estimated using a ratio of CO_2e/€ customer turnover.	-
5	Emissions estimated using a ration of CO_2e/€ exposure.	20%
	Weighted PCAF score of our portfolio	**2.84**

2 - D SCENARIO AND TARGET

IEA NZE SCENARIO

As with other sectors, the reference scenario used for electricity production is the IEA's NZE by 2050 scenario.

This scenario predicts that the electricity segment will play a central role in supporting the transition of the economy as a whole. In the scenario, electricity production is rapidly decarbonized, reaching net zero emissions by 2035 in developed countries, and by 2040 worldwide. At the same time, total electricity consumption increases by 40% between 2020 and 2030 and almost triples between 2020 and 2050, driven up to 75% by developing countries and accelerated by the electrification of transport (use of electric engines), industry (e.g. electric arc furnaces in metallurgy), buildings (switching from oil or gas boilers to electric heat pumps) and the development of the green hydrogen sector.

This combined trajectory of decarbonization and strong growth drives the development of renewable energy: between 2020 and 2030, the production of wind electricity is multiplied by 5 and photovoltaic power by 8.5, supported by rapid progress in long-term storage technology to compensate for the intermittency of these energies.

By 2030, nuclear power (+40%), hydroelectricity (+ 35%), geothermal energy (+250%) and biomass (+ 96%) will have been further developed, depending on the deposits and political incentives in each region.

This rapid growth in low-carbon energies will also lead to a dramatic reduction in the production of electricity from coal and fuel oil, by 70% and 75% respectively over ten years.

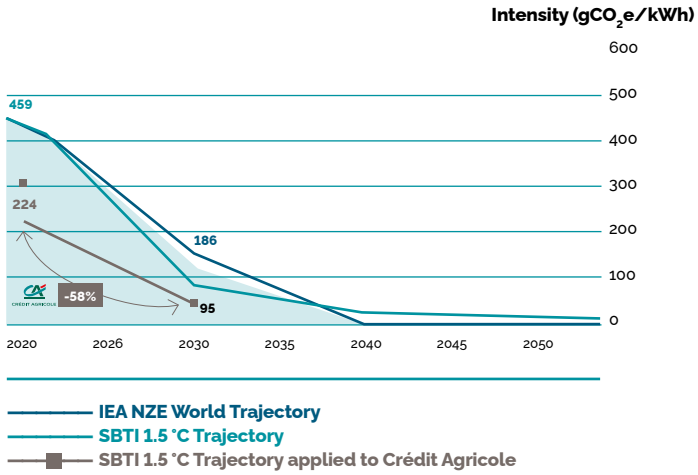
Finally, electricity production from natural gas would remain stable (+3% between 2020 and 2030) and carbon capture and sequestration technology would gradually be adopted towards the end of the decade.
In total, nearly $60 trillion would be needed by 2050 to finance this transition in the electricity production sector, mainly to install low-carbon capacity, but also to stabilize electricity networks (connections, reinforcement, storage, smart technologies, etc.), as well as to optimize remaining fossil fuel capacities (carbon capture, conversion to low-carbon fuel, etc.)

By 2030, this transformation of the global electricity system will significantly reduce the average carbon intensity of electricity worldwide, falling from 459 gCO_2e/kWh in 2020 to 138gCO_2e/kWh in 2030 (-70%) according to the IEA's initial Net Zero scenario, published in 2021.

Having noted that average carbon intensity did not decrease between 2021 and 2023, the IEA has twice increased its key milestones for 2030: 165 gCO_2e/kWh in the IEA's 2022 NZE scenario and 186 gCO_2e/kWh in its 2023 scenario. The IEA scenario takes into account economic and physical realities. We must start reflecting on how to maintain our trajectory if the scenario on which it is based is deemed more realistic.

OUR COMMITMENT

DECARBONIZATION TRAJECTORY VS IEA NZE SCENARIO



We plan to achieve this objective by applying three key levers: supporting our corporate clients to divest from coal, significant financing of renewable energy projects, and limiting our budget for natural gas projects.

2 - E LEVERS AND ACTION PLAN

These ambitious objectives are informed and reinforced by Crédit Agricole Group's proven experience in renewable energy financing, and they present commercial opportunities.

The Crédit Agricole Group will significantly increase its financing of renewable energies by capitalizing on its unique positioning to identify projects on both a local and global scale. We will therefore multiply our financing of renewable energies by three by 2030, and our financed production (TWh) by 3.6.

At the same time, the Group will selectively withdraw from fossil fuel-based production plants by completing its phasing out of coal by 2030 (OECD countries) and by 2040 (for the rest of the world) and by making more selective and restrictive decisions on the financing of gas power plants.

Crédit Agricole CIB has several levers at its disposal to achieve these ambitious objectives:

- **Reducing the intensity** of the CACIB portfolio will primarily be achieved through increased financing of projects and companies with renewable energy assets. In 2021, CACIB made a commitment to increase its exposure to non-carbon energies by 60% between 2020 and 2025. This growth commitment was increased to 80% in 2023, and will amount to €13.3 billion by 2025.

- **CACIB will also expand its client base,** thanks to its international positioning, to better reflect the growing diversity of the sector in terms of technology and geographical area. In addition, CACIB is focused on increasing its support for companies specialized in transition energies and assets.

To achieve the target to decarbonize its portfolio by 60% by 2030, Crédit Agricole Leasing & Factoring has developed and is currently implementing the following action plan:

- **Providing more support** for our French customers in Europe and development of local commercial potential with the Group's banks in Italy and Poland.

- **Adopting a string position** on market innovations such as hydrogen and renewable energy storage and new business models (corporate PPA, self-consumption and agrivoltaics).

- **Reducing oour exposure** to gas while continuing to support the agricultural sector (greenhouses) and public authorities (heating network).

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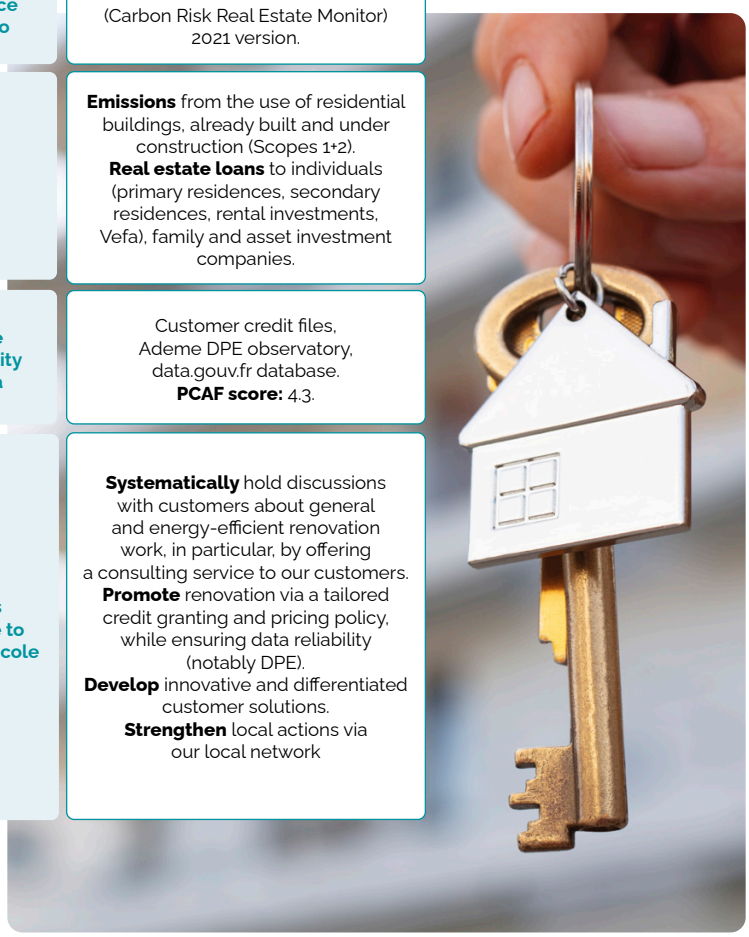
RESIDENTIAL REAL ESTATE

ENTITIES : CAISSES RÉGIONALES DU CRÉDIT AGRICOLE, LCL

3 - A SUMMARY OF THE SECTOR

Financing commitments related to 2023	€429 Bn (on-balance sheet and off-balance sheet MLT loans)..
Starting point 2020	22 $kgCO_2e/m^2$/year in France.
Target for 2030	Contribute to achieving France's target of 12.4 $kgCO_2e/m^2$/year.
Reference scenario	CRREM FR scenario (Carbon Risk Real Estate Monitor) 2021 version.
Scope	**Emissions** from the use of residential buildings, already built and under construction (Scopes 1+2). **Real estate loans** to individuals (primary residences, secondary residences, rental investments, Vefa), family and asset investment companies.
Source and quality of data	Customer credit files, Ademe DPE observatory, data.gouv.fr database. **PCAF score:** 4.3.
Levers available to Crédit Agricole	**Systematically** hold discussions with customers about general and energy-efficient renovation work, in particular, by offering a consulting service to our customers. **Promote** renovation via a tailored credit granting and pricing policy, while ensuring data reliability (notably DPE). **Develop** innovative and differentiated customer solutions. **Strengthen** local actions via our local network



3 - B SCOPE OF ACTIVITY AND GREENHOUSE GAS

The scope of greenhouse gas emissions taken into account in the residential real estate sector covers emissions from building use (Scope 1 direct emissions + Scope 2 indirect emissions).

In total, the use of buildings generates around 75% (according to Citepa) of their greenhouse gas emissions, over their entire life cycle. When data of sufficient quality is available, the next step for Crédit Agricole will be to include, in its reference baseline, emissions from the construction of buildings (since upstream Scope 3 emissions account for approximately 5% of greenhouse gases over a building's entire life cycle). As for the production of materials (upstream Scope 3 emissions account for approximately 20% of greenhouse gases over their entire life cycle), emissions relating to the production of cement and steel are taken into account in their respective sectors ..

See our sector sheet on page 86.

According to Citepa, in France, total emissions linked to building use amounted to 52 million tons of CO_2 equivalent ($MtCO_2e$) in 2022, including 37 $MtCO_2e$ for heating, far higher than for domestic hot water (6 $MtCO_2e$), cooking and lighting, etc. These emissions vary according to the region (less than 17 $kgCO_2e/m^2$ in the Mediterranean area, and more than 27 $kgCO_2e/m^2$ in the North-East, with a national average of 25 $kgCO_2e/m^2$, according to estimates by Ademe); the type of energy used (natural gas, fuel oil, district heating, LPG,

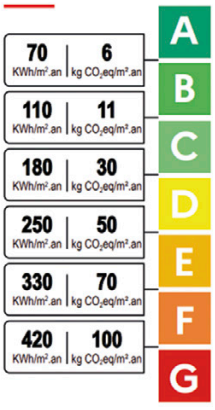
electricity, etc.); and the building itself (insulation, quality of equipment).

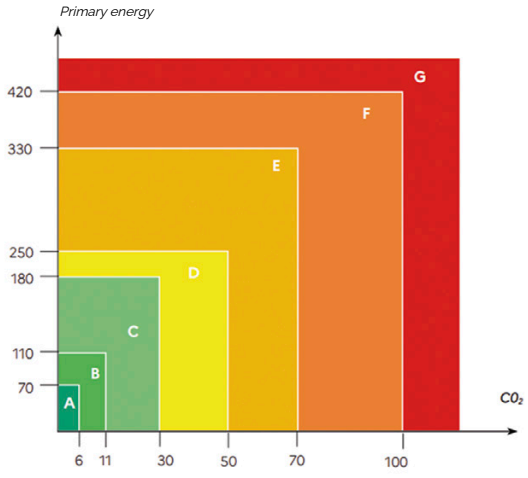
There are several levers for action available to reduce emissions from building use: opting for less emissive heating system, thermal renovation work, low-carbon construction, energy-efficient equipment, user energy sufficiency, etc. It is important to note that decarbonization will require a major overhaul of existing homes.
Emissions related to the use and energy consumption of housing, are indicated by the Energy Performance Diagnosis (DPE). For Crédit Agricole, this represents a key asset for ensuring the reliability of data on the emissions it finances and identifying appropriate levers for action: insulation, boiler replacement, changing windows, etc.

LThe DPE is based on two components: the first is energy consumption and the second relates to a home's greenhouse gas emissions. This scale has seven categories, ranging from the most energy-efficient to the most energy-intensive properties: A B, C, D, E, F and G ratings are used to assess the energy and climate performance of buildings. Regulations have been introduced, imposing new measures to support the transition.

From April 1, 2023, homes classified as F or G (poorly insulated) will be subject to an energy audit in the event of a sale. This audit provides the future buyer with ideas for energy renovation work. In addition, homes classified as G, F or E will be banned from the rental market in 2025, 2028 and 2034 respectively.

New dual thresholds of energy performance labels





3 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

Choice of metric

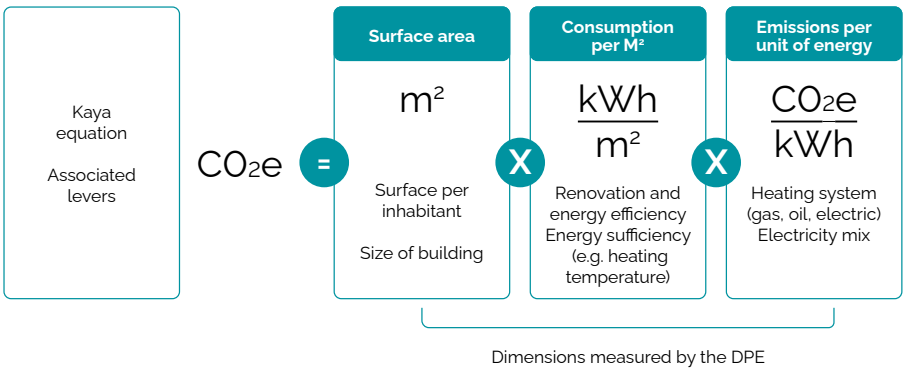
The metric chosen is carbon intensity in kilos of CO_2 equivalent per square meter and per year ($kgCO_2e/m2/year$)
This metric per m2 gives us a better understanding of the emissions emitted by homes, and, therefore, the positive impact of renovating or choosing a home with lower emissions. It is also used to communicate our emission reduction targets to our stakeholders (e.g. the Net Zero Banking Alliance (NZBA), and the Science Based Targets Initiative (SBTI), etc.

Greenhouse gases included

CO_2, methane and HFCs (hydrofluorocarbons, which are emitted by air conditioning systems in particular).

Calculation of financed emissions

CO_2e emissions linked to building use are quantified according to the Kaya equation, which is based on 3 main variables.



The emissions financed by Crédit Agricole are calculated using the Partnership For Carbon Accounting Financials (PCAF) loan-to-value approach methodology. The carbon intensity of the portfolio is the total emissions financed annually divided by the total square meters financed. To determine the emissions to be attributed to the Group, an attribution factor must be calculated, which is equal to the ratio of the outstanding amount/value of the property at the time of purchase.

2020 baseline

2020 was chosen as the baseline year, as for the other sectors (except for aviation). The average carbon intensity of housing use financed in France by the Crédit Agricole and LCL Regional Banks is 22 $kgCO_2e/m/year$.

Measurement quality

Generally speaking, depending on its availability, the data may come from real data (surface area, energy consumption, DPE) or from statistical evaluations in accordance with Ademe's DPE observatory, or data.gouv.fr, etc. Depending on the data quality, the PCAF score varies from 1 (real data) to 5 (use of approximate data only). According to this scale, our PCAF score for the residential real estate sector is 4.3. To improve accuracy, the current challenge for Crédit Agricole is to systematically collect data on housing surface area and DPEs.

3 - D SCENARIO AND TARGET

CRREM-FR V2021 scenario

The reference scenario on which Crédit Agricole has based its objective for decarbonizing its residential real estate portfolio is the 2021 version of the Carbon Risk Real Estate Monitor (CRREM) scenario for France, in line with that already chosen for the commercial real estate sector. Developed by a consortium funded by the European Union, this tool is based on possible trajectories for limiting global warming to 1.5°C. Based on NZE assumptions, it can be used by companies in the sector to take this issue into account, by estimating the energy saved and emissions avoided through renovation. It was chosen over the International Energy Agency's NZE scenario because it provides more detail by country and by building type.

OUR COMMITMENT

Supporting property owners to help achieve France's objective of 12.4 $kgCO_2e/m^2$ per year by2030, in accordance with the 2021 version of the CRREM reference scenario for France.

3 - E LEVERS AND ACTION PLAN

Decarbonizing the residential real estate sector requires the involvement of all stakeholders, and particularly the commitment of each property owner, working in synergy with local companies to take into account specific regional requirements, public policy incentives and the structuring of an efficient building industry.

With this in mind, Crédit Agricole's action plan is based on four main levers:

- Systematically holding discussions with customers on comprehensive and Energy-efficient renovation work:
  - using the period of sale of a property with a DPE rating of E, F or G as a key time for action: homes are unoccupied, the work is less costly and more efficient, and the energy performance of run-down properties can be considerably improved;
  - providing a consulting service for our customers: awareness raising, network training, promotion of our support solutions, etc.

- Promoting renovation via a tailored credit granting and pricing policy, while ensuring reliability of data (in particular, DPE data) and which includes the costs for work in the financing plan..

- Developing innovative and differentiated customer solutions: using financial engineering techniques, developing new acquisition methods, introducing diversified offers, etc.

- Strengthening local actions via our regional network, in particular through partnerships with regional stakeholders.

COMMERCIAL REAL ESTATE

ENTITIES : CAISSES RÉGIONALES DU CRÉDIT AGRICOLE, LCL, CACIB, CAL&F, CRÉDIT AGRICOLE ITALIA

4 - A SUMMARY OF THE SECTOR

Financing commitments related to 2023	€83,2 Bn (on-balance sheet and off-balance sheet MLT loans).
Starting point 2020	36.4 $kgCO_2e/m^2/year$ (1).
Target for 2030	22 $kgCO_2e/m^2/year$ (– 40 %).
Crossing point 2023	35 $kgCO_2e/m^2/year$.
Reference scenario	CRREM (Carbon Risk Real Estate Monitor) Scenario – Global Decarbonization Pathways 2021.
Scope	**Sub-sectors (value chain):** tertiary and residential real estate (built and under construction, excluding financing for private customers), companies in the real estate, hospitality and real estate development sector. **Scope of emissions:** Emissions from building use (Scopes 1 and 2).
Source and quality of data	**Data quality:** PCAF score 4 to 5. **Sources:** customer data, company reports, DPEs, database PCAF/CRREM, MSCI, Statista.
Levers available to Crédit Agricole	**Engaging existing customers:** financing of renovation work, development of partnerships and offers promoting energy sufficiency. **Attracting new customers:** financing of low-carbon buildings and renovation work.

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(1) Following the announcement of the trajectory in 2022, which lowered the reference base from 46 to 36 $kgCO_2e/m2/year$ as a result of inclusion in the scope of the Regional Banks' portfolios, structurally less carbon-intensive and, more marginal, work to improve the quality of data that led to an adjustment of the reference bases of Crédit Agricole S.A. entities. The objective to reduce carbon intensity by 40% by 2030 (compared to 2020) has been maintained, i.e. a 2030 target of 22 $kgCO_2e/m/year$ (compared to 27.7 previously)

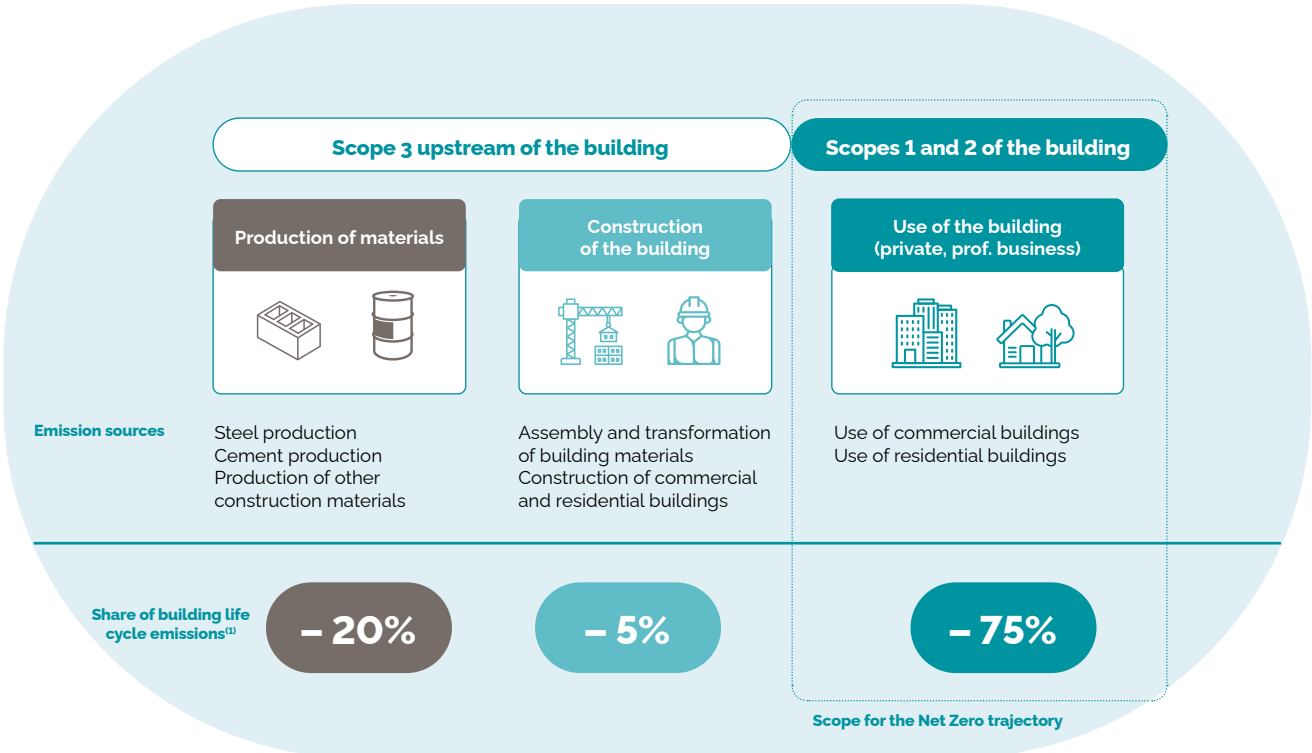
4 - B SCOPE OF ACTIVITY AND GREENHOUSE GAS

To date, we have included the medium and long-term outstandings, on- and off-balance sheet, gross of guarantees for financing of buildings and business loans. This financial scope makes it possible to estimate Crédit Agricole Group's contribution to the sector's real economy as accurately as possible.

Crédit Agricole Group has opted to prioritize quality data and to include segments of the value chain whose emission intensity can be estimated with the best possible reliability to date. As stated in the introduction, the emissions reference base is subject to change because of ongoing efforts to improve the quality of data used. For the financing of buildings, we calculated the emission intensity for all tertiary and residential buildings (excluding private real estate), built and under construction. Corporate lending has been divided into three sub-sectors: real estate companies, property developers and the hospitality sector.

Emissions linked to building use account for over 75% of the building sector's emissions in France according to Citepa. .
The scope of emissions selected in the first instance covers Scope 1 (building operations) and Scope 2 (electricity and heat supplied) emissions relating to building use. As soon as the quality of data is sufficient, the next step for the Group will be to include emissions linked to the construction buildings in the reference base.

No carbon offsetting has been taken into account in the calculation of emission intensity.



(1) *France scope.*

4 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

Crédit Agricole Group has chosen to calculate its financed emissions from the commercial real estate sector in emission intensity per square meter: $kgCO_2e/m2/year$. This unit corresponds to the quantity of CO_2e emitted per m2 and per year.

As recommended by industry standards, we have calculated the average financing intensity by dividing total financed emissions by the total financed surface area.

Average financing intensity = $\frac{\sum \text{Financed emissions}}{\sum \text{Financed surface area}}$

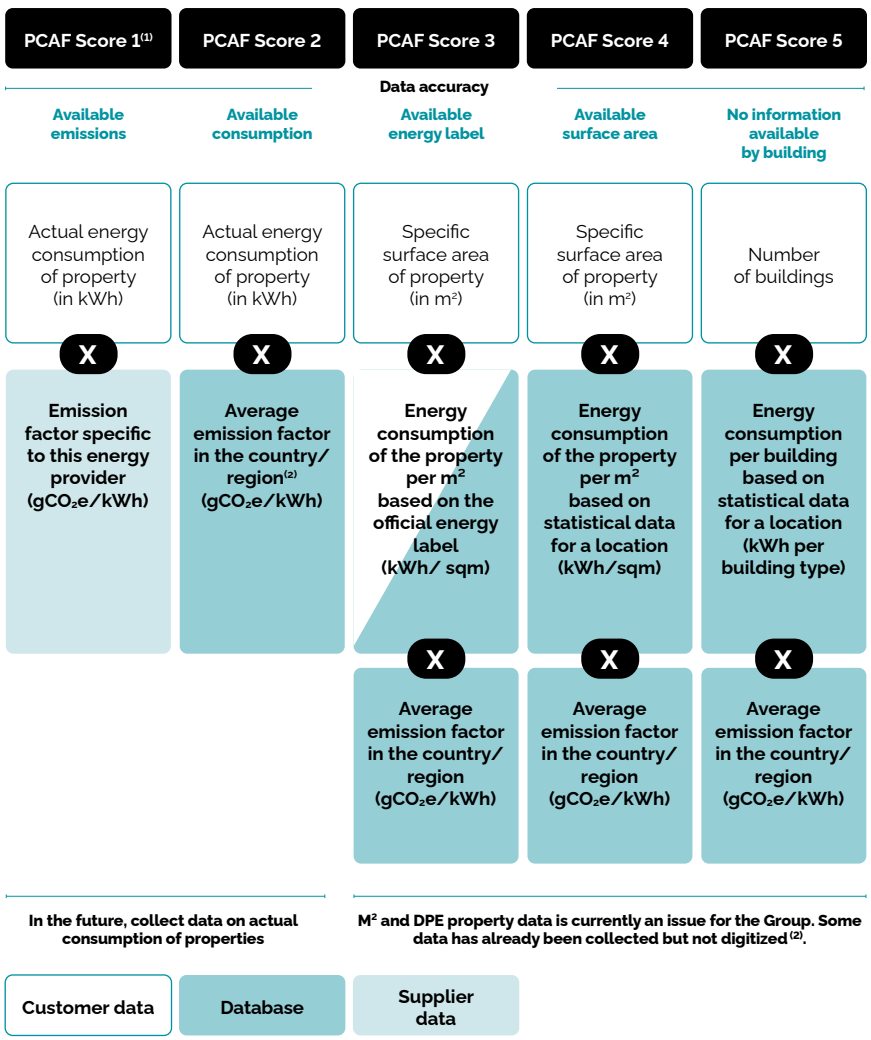
The methodology for calculating financed emissions and financed surface area is not the same as that for the financing of real estate and the financing of businesses.

Financing of real estate

- Proportion of financing: outstanding on-balance sheet and off-balance sheet MLT outstandings divided by the most recent value of the asset or initial value.
- Surface area: total surface area of the asset.
- Emission intensity: DPE of the property if available, otherwise emissions intensity by type of property and by country, provided by PCAF/CRREM or other publications for countries outside Europe.

Corporate financing in the real estate sector

- Financing: MLT outstandings on- and off-balance sheet.
- Average price/m²: MSCI price of the country at the end of the year according to the asset category or Statista price.
- Emission intensity: intensity published by the company if available, otherwise emission intensity by property type and by country provided by PCAF/CRREM or other publications for countries outside Europe.



(1) PCAF quality score 1/5 (best possible performance; scale from 1/5 to 5/5).
(2) Potentially by energy source.

The two main types of customer data required to calculate the baseline (or provided by external providers if not available) are emission intensity and surface area (when surface area is not available, price per m^2 data can be used to calculate the financed surface area). Depending on data availability, the PCAF data quality score varies between 4 and 5.

The availability of emissions data varies considerably depending on the geographical area. As such, financed emissions from the commercial real estate sector were estimated on a proxy basis, and, as far as possible, on real data where available.

The most reliable sources of this data were chosen in the first instance: customer data, PCAF/CRREM, MSCI, Osservatorio del Mercato Immobiliare, Statista and the Australian Bureau of Statistics.

Given that the quality of data used for our baseline is still limited for certain geographical areas and entities, as part of a continuous improvement process, we plan to work on improving our baseline calculation.

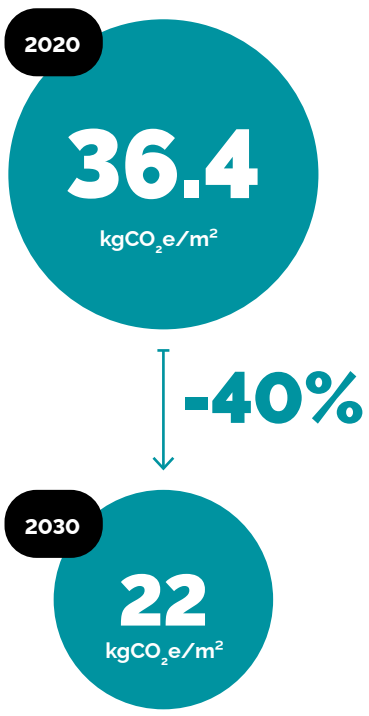
In this regard, we will work with our customers to obtain and automate the collection of the following data across our entire portfolio:

- The total surface area of the property and its value at the time of purchase.
- The original DPE of the property, and if necessary, the DPE after renovation work and, secondly, actual emission intensity.
- The emission intensity of the financed company.

4- D SCENARIO AND TARGET

The Carbon Risk Real Estate Monitor (CRREM) scenario is the reference scenario for the commercial real estate sector which provides a framework for evaluating and managing the carbon performance of the real estate portfolio. This scenario seems the most relevant to us because it starts from a global vision to achieve regional and usage granularity. We use the CRREM V2021 scenario. The reduction in intensity measured by this scenario between 2020 and 2030 is – 40% for companies in the real estate sector and companies that have operating real estate.

Decarbonization trajectory ($kgCO_2e$ intensity/m^2)



The objective set by the Crédit Agricole Group is 22 $kgCO_2e/m^2$ by 2030 compared to 36.4 $kgCO_2e/m^2$ in 2020 for this same scope (– 40%).

4 - E LEVERS AND ACTION PLAN

We have identified several transition levers available to the Group and are working with all of our business teams to include them in our action plans to best support our customers.

For new customers:

- Selection criterion for new customer acquisitions (emission intensity criterion – see below)
- Low-carbon renovation work.
- Emission intensity criterion for new buildings.
- Encourage customers to acquire less energy-intensive buildings or to renovate properties.

For existing customers:

- Support our customers in renovating their buildings.
- Develop partnerships with real estate and construction companies to facilitate access to quality renovation work.
- Facilitate access to low-carbon energy sources (solar panels and heat pumps).
- Develop offers to support customers with energy sufficiency.

Crédit Agricole CIB will apply three key levers to achieve the decarbonization target:

- Continue to develop more precise knowledge of the portfolio's emission intensity to replace the proxies used currently (by continuing to include physical intensity data).

- In the corporate sector, incorporate more specific criteria (data by geographical area and building type), and support the best-performing companies by geographical area and segment, which will require a more precise selection/deselection process (select the best-performing and/or ambitious customers) and substantially increase our share of impact financing

(SLL - "Sustainable Linked Loans") in order to support clients in their ESG transition and aims.

- In the project segment, position the Group on more socially-responsible projects in the countries concerned. In this respect, the aim is to strengthen the bank's green portfolio[1] and to develop financing for new builds and major renovations.

For LCL, collecting and recording the energy performance of real estate assets will be a key priority, in order to improve the reliability of average intensity calculations and offer appropriate financing. The data collected will potentially be used to adapt the action plan.

The actions required can be categorized as follows:

- Adopt a systematic commercial incentive approach for the flow of SLL type financing indexed to improvement in the DPE rating) by developing new commercial offers (unsecured bullet loans for building work, financing + works package, Net Zero transition advice).

- Make the property's energy performance central to the credit granting process, and aim to progressively integrate into the credit decision a satisfactory carbon intensity criterion and/or the financing of thermal renovation work sufficient to achieve the target DPE rating.

- Take a proactive approach to the building stock to promote thermal renovation work, through financial incentives, and/or increased restrictions, particularly on bullet financing..

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As for the Regional Banks, several levers have been identified:

- Adopt an incentive-based and proactive commercial approach to promote energy renovation (incorporating energy efficiency into the credit granting process).

- Develop innovative customer solutions, tailored to their activity and specific needs (acting as a trusted third party and key advisor, targeting companies subject to the tertiary sector decree to review their energy-efficient renovation process).

- Develop local partnerships to support regions and national partnerships to strengthen Groupwide initiatives.

Finally, Crédit Agricole Leasing & Factoring will need to create two new offers to achieve the objective:

- Offer to renovate assets in the real estate stock to support customers in their transition and increase the average portfolio value;

- Offer from the Energy Transition HUB to roll out "green" solutions to customers (LED offer, rooftop solar panels).

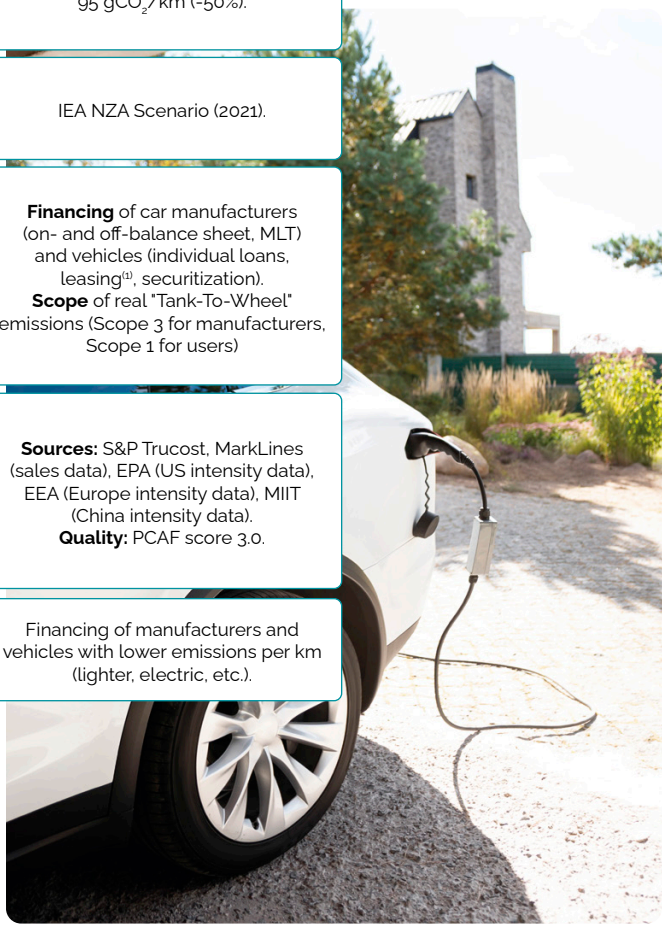
(1) Crédit Agricole's Green Bond Framework is available here: https://www.credit-agricole.com/finance/dette-et-notations.

AUTOMOTIVE

ENTITIES : CRÉDIT AGRICOLE PERSONAL FINANCE & MOBILITY/CRÉDIT AGRICOLE CIB / CRÉDIT AGRICOLE LEASING & FACTORING

6 - A SUMMARY OF THE SECTOR

Financing commitments related to 2023	€52.9 Bn (prêts MLT bilan et hors bilan).
Starting point 2020	190 gCO_2/km.
Crossing point 2023	166 gCO_2/km.
Target for 2030	95 gCO_2/km (-50%).
Reference scenario	IEA NZA Scenario (2021).
Scope	**Financing** of car manufacturers (on- and off-balance sheet, MLT) and vehicles (individual loans, leasing[1], securitization). **Scope** of real "Tank-To-Wheel" emissions (Scope 3 for manufacturers, Scope 1 for users)
Source and quality of data	**Sources:** S&P Trucost, MarkLines (sales data), EPA (US intensity data), EEA (Europe intensity data), MIIT (China intensity data). **Quality:** PCAF score 3.0.
Levers available to the Group	Financing of manufacturers and vehicles with lower emissions per km (lighter, electric, etc.).



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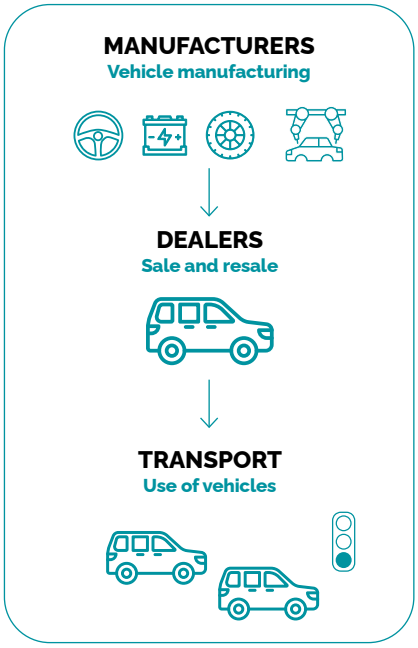
[1] For CAPFM, only "finance leasing" is included in the NZ scope

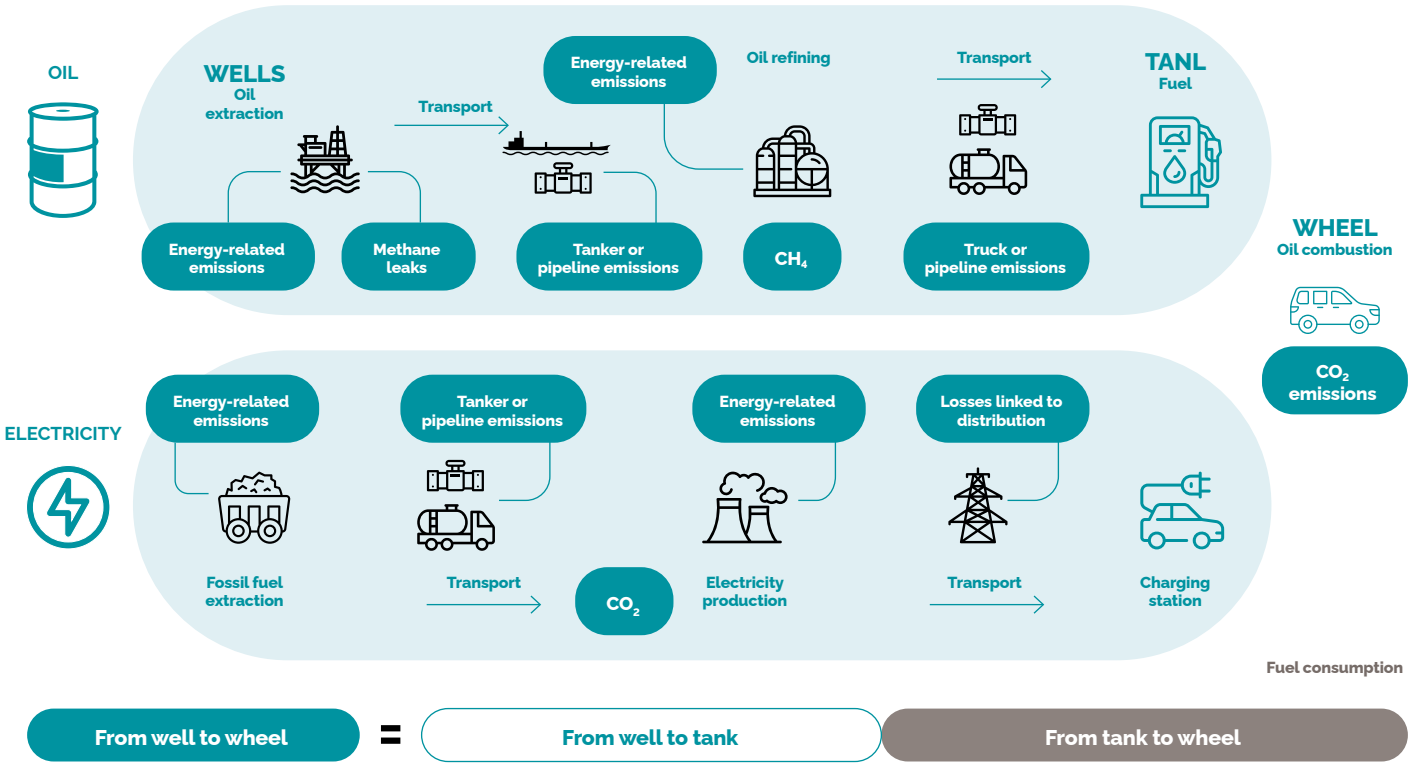
6 - B SCOPE OF ACTIVITY AND GREENHOUSE GAS

Crédit Agricole Group provides financing in the Automotive sector at different levels: for vehicle manufacturing, sale and resale and via the financing of end users (transport professionals or private customers).



The fuel consumed (Scope 1 of users) is currently the main source of emissions in this value chain (~70%). The metric used in the sector is therefore "Tank To Wheel" (TTW) emissions, which relates to downstream Scope 3 emissions from "use of products sold" by car manufacturers.

Detail on the concepts of "from Well-to-Tank" (WTT) and "from Tank to Wheel" (TTW)



In this value chain, Crédit Agricole's financing is particularly focused on car manufacturers (through Crédit Agricole CIB in particular) and private or professional users (with Crédit Agricole Personal Finance & Mobility and Crédit Agricole Leasing & Factoring, in particular). Suppliers (upstream of manufacturers) and dealers are excluded from the measurement of emissions that come from the vehicles they help to build or distribute. This decision was made due to the limited availability of data and in order to limit the double counting of emissions within the value chain for actors whose emission reduction strategies are still limited today. These two segments (suppliers and distributors) are also less material in terms of Crédit Agricole Group financing, compared to car manufacturers and financing of private and professional vehicles (<10% of exposure across the value chain).

This measurement is currently based on "Tank-To- Wheel" (TTW) emissions, excluding upstream emissions in the fuel and electricity value chain, known as "Well-to-Tank" (WTT) emissions, and upstream emissions in the vehicle manufacturing chain (e.g. from steel production, energy from assembly plants, etc.). This methodology was chosen because it is aligned with the IEA's NZE scenario, which defines a trajectory based on the TTW metric. The electrification of the vehicle fleet will rapidly increase the share of emissions from battery production in the value chain (estimated at around ~30% by 2030), justifying a review of the metrics and trajectories, when the reference scenarios are updated.

The Group's work currently focuses on light vehicles (passenger and light commercial vehicles), with the aim to expand this to heavy vehicles in the future.

6 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

The Crédit Agricole Group measures the TTW emissions of its financing to car manufacturers and financing of private or professional vehicles. This measurement is calculated in terms of intensity per kilometer (i.e. vehicle. kilometer), in gCO_2/km.

Vehicle emission intensity is currently calculated in different ways depending on the region, using the test cycles for new vehicles produced, in particular the "New European Driving Cycle" (NEDC) and the "Worldwide Harmonized Light Vehicles Test Procedure" – WLTP. Several studies, notably by the International Council on Clean Transportation (ICCT), have highlighted the discrepancies between actual emission intensity values and the measurements calculated for these cycles. The results for emission intensity provided in this report are intended to be as close as possible to the actual emission intensity values: a correction factor has therefore been applied to correct the values for the NEDC and WLTP cycles (+39% and +15% respectively)(1).
his "standardized" result is referred to as "actual tailpipe emissions". The term "gCO_2/km emission intensity" refers here to this standardized measurement. The emission intensity of Crédit Agricole Group financing is calculated differently for corporate financing (car manufacturers) and targeted vehicle financing (for individuals or professionals). The financed emissions and intensity of a financing portfolio are measured according to the PCAF approach.

Car manufacturers

For car manufacturers, emission intensity is calculated using data from the American (EPA), European (EEA) and Chinese (MIIT) agencies, to provide a single measurement that enables comparison between different manufacturers.

- **The EPA** provides a direct measurement of "real-world emissions" by manufacturer (in gCO_2/miles, converted to gCO_2/km), for all light vehicles (Cars and Light-Trucks).
- **The EEA** provides databases of light vehicles (Passenger Cars and Vans) with vehicle emission intensity values, aggregated to obtain the average intensity values of manufacturers.
- **The MIIT** provides a database of average fuel consumption by manufacturer for passenger vehicles, extrapolated to light vehicles. The China intensity data has been reprocessed to convert it to the same format as the other intensity values.

These different sources are combined based on vehicle sales in North America, Europe and China to estimate the global average intensity of manufacturers financed by the Crédit Agricole Group. This approach has also been used for the securitization outstandings of captive financing subsidiaries of the main automobile manufacturers.

Private and professional vehicles

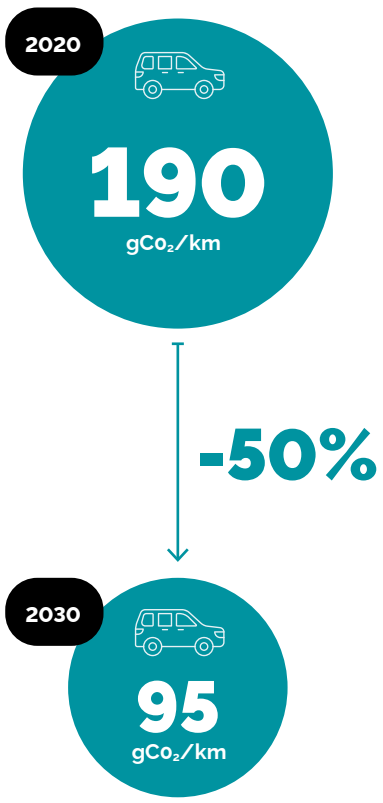
Financed vehicle intensity is used where available, otherwise a proxy is used depending on the information available on the vehicle (e.g. make, model and energy). These proxies are estimated using the EEA light vehicle registration databases (for Europe).

6 - D SCENARIO AND TARGET

The IEA's NZE scenario also references the Automotive sector. The intensity reduction measured in this scenario between 2020 and 2030 is -46% for passenger vehicles, which we have applied to all financed light vehicles. The Group has decided to go a step further by targeting a -50% reduction by 2030.

Decarbonization trajectory

Intensity (gCO_2/km) – Use of TTW under real-world conditions



The Crédit Agricole Group has set a target of 95 gCO_2/km by 2030 compared to 190 gCO_2/km in 2020 for this same scope (-50%).

(1) To measure emissions related to the actual use of plug-in hybrid electric vehicles (PHEVs) financed by CAPFM, a correction factor of x3 was applied to the calculations as of 12/31/2022 and 12/31/2023.

6 - E 2030 LEVERS AND ACTION PLAN

The key to achieving the objectives of this scenario lies in the rapid electrification of the vehicle fleet, a position that Crédit Agricole Group has adopted at all levels: support for manufacturers and incentive-based financing of electric vehicles for users.

The Crédit Agricole Group also plans to support this sector's transformation by financing new players, such as battery manufacturers, charging solution operators and manufacturers specializing exclusively in electric vehicles, and by closely monitoring manufacturers' trajectories in terms of carbon emissions.

Crédit Agricole Personal Finance & Mobility

Reducing the carbon footprint of Crédit Agricole Personal Finance & Mobility's automotive outstandings will mainly be achieved through the impact of the CAFE tax applied to manufacturers (-35%). The reduction in carbon intensity will be achieved through new agreements signed by Crédit Agricole Personal Finance & Mobility with new American manufacturers of 100% electric vehicles (Tesla, Lucid), and Asian manufacturers like VinFast or MG, that are already partners of CA Auto Bank, as well as the many other leading Chinese manufacturers aiming to conquer the European market.
The new joint venture with Stellantis for operating leasing activities (Leasys), for which the average fleet age will be 2 years, will also have a major impact on reducing CAPFM's carbon intensity.

This action plan reflects Crédit Agricole Personal Finance & Mobility's determination to become the leader in green mobility from 2025, with one in every two new vehicles financed having a 100% electric or hybrid engine and one in every three new vehicles financed being 100% electric.

Crédit Agricole Leasing & Factoring

The objective to decarbonize Crédit Agricole Leasing & Factoring's automotive portfolio by 50% will benefit from the positive impact of these same regulations and will be achieved via the following levers:

- Optimizing our distribution channels, particularly within the Group's banks, to facilitate the sale of electric vehicles as well as associated services.
- Boosting sales of 100% electric light utility vehicles via Watea (a joint venture with Michelin focused on rental and electrification of professional fleets).
- Developing offers for low-carbon mobility with measures relating to residual values and the optimization of prices for associated services and insurance. ■

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AVIATION

ENTITY : CRÉDIT AGRICOLE CIB

7 - A SUMMARY OF THE SECTOR

Financing commitments related to 2023	€8.9 Bn (on- and off-balance sheet MLT loans).
Starting point 2019	1,003 gCO_2e/RTK (Revenue Ton Kilometer: revenue ton transported/kilometer).
Target for 2030	750 gCO_2e/RTK.
Reference scenario	"Prudent scenario" of the Mission Possible Partnership (MPP) industry coalition, aligned with a 1.5°C trajectory (NZBA)..
Scope	**Financing** of assets (aircraft) and corporate financing (lessors and airlines), and equity interests. **Combustion of fuels** used by commercial aviation, and emissions linked to their production (Scope 1 and Scope 3 of aviation companies).
Source and quality of data	Customer ESG reports and IBA data, provider approved by the International Capital Markets Association. **PCAF score:** 2.89.
Levers available to Crédit Agricole CIB	**Priority** given to financing of more fuel efficient, fourth-generation aircraft. **Involvement** in the sustainable fuel value chain. Ongoing **dialogue** with customers.

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7 - B SCOPE OF ACTIVITY AND GREENHOUSE GAS

The scope of greenhouse gas emissions for the aviation sector covers emissions generated by the combustion of fuel (currently kerosene) for commercial aviation (passenger transport and cargo operations). It also relates to upstream emissions associated with the production of this fuel, the so-called Well-to-Wake (WTW) approach.

An total, these emissions account for more than 90% of airline emissions[1] (79% of Scope 1 and 15% of Scope 3). They are considered "hard-to-abate" for several reasons. They relate to a market that is still growing (predicted growth in air traffic of at least 3% per year from 2024[2]). Moreover, drastically reducing these emissions would require the development of Sustainable Aviation Fuels (SAFs), as well as disruptive technologies (electric aircraft/ hydrogen-based fuels), by 2035-2050. In the meantime, while the first SAFs are emerging, two additional measures could help to reduce emissions: the construction and deployment of more fuel-efficient aircraft, and improved operational efficiency, both on the ground and in the air.

To decarbonize this complex sector, Crédit Agricole has co-founded, together with other banks and the support of the expert research center, the Rocky Mountain Institute (RMI), the Aviation Climate-Aligned Finance Working Group (ACAF), based on the Poseidon Principles applied to the shipping sector. This work gave rise to a collective framework for aviation financing that is aligned with the NZBA's climate goals, and the sector's global Net Zero 2050 commitments (the International Airlines Association and the International Civil Aviation Organization).
It can also be used to objectively measure the bank's progress on reducing the emissions associated with its loan portfolio.

For this reason, the scope of Crédit Agricole CIB's gross commitments (medium-/long-term loans, on- and off-balance sheet)–$8.9 billion in 2023 for around 120 customers–covers financing for airlines and leasing companies: asset financing (aircraft) for the most part, as well as corporate financing and equity interests. Airports and civil aircraft manufacturers are currently excluded from this scope.

7 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

Choice of metric

The metric chosen is carbon intensity per revenue-ton-kilometer. It is measured in grams of CO_2 equivalent (gCO_2e/RTK, Revenue-Ton-Kilometer). By convention, the weight of a passenger has been set at 100 kg. This metric reflects the entire "Air Transport" commercial activity of our customers, whether passenger or freight transport, and favors aircraft filled to capacity.
In line with the scope covered, this metric takes into account not only the emissions emitted by the aircraft during flights, but also the emissions associated with fuel production, in accordance with the WTW approach. This applies a forward-looking methodology where the cleanest fuels are valued more highly.

Calculation of financed emissions

The carbon intensity of the portfolio is the average intensity, weighted by gross commitments, of the aircraft that make up the customer fleet. For asset financing, it is the average intensity per type of aircraft, with some exceptions (average intensity of the borrower's total fleet), which is taken into account. For corporate financing and equity interests, the average total intensity of the customer's fleet is used.
The aviation sector is the only sector which has opted for a different methodology (average weighted by outstandings) in alignment with the industry choice made by the working group which led to the publication of the Pegasus Guidelines

(1) Climate Action 100+ sector Strategy: aviation - landscape analysis. January 2021.
(2) Global Outlook for Air Transport - Deep Change. June 2024.

2019 baseline

Unlike the other sectors, the reference year taken into account for aviation is 2019 and not 2020. Due to the impact of the Covid crisis, 2019 is more representative of the real situation in the sector: drop in the number of flights and passengers, very unbalanced medium-/long-haul mix, geographical disparities, etc. As a result, the sector's emissions were cut in half while carbon intensity automatically increased due to a low load factor. The 2019 baseline for financed carbon intensity is 1,003 gCO_2e/RTK, with 33% new-generation aircraft. It is based on gross commitments of $9.6 billion.

Measurement quality

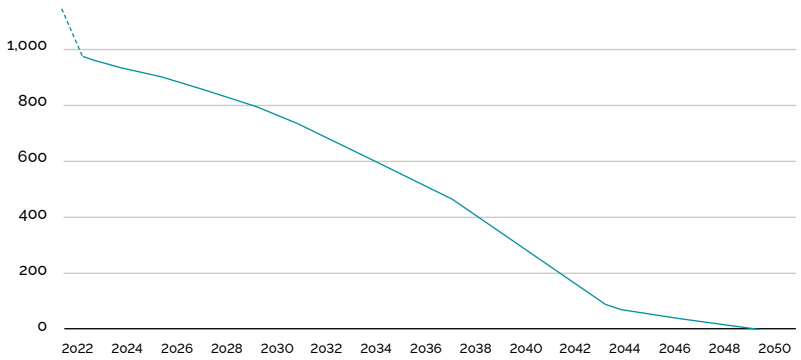
Data may be collected from the ESG reporting of airlines, or from IBA, a provider of aviation industry data approved by the International Capital Markets Association (ICMA) as a "second party opinion provider" for aviation financing with a sustainable component. IBA is developing a civil aeronautics emission modeling tool based on real-world activity and aircraft capacities.
According to the PCAF scoring system, which assigns a score of 1 to emissions directly published by companies, 2 to emissions estimated via customer consumption volumes, 3 to emissions estimated via customer production volumes, 4 to emissions estimated using a ratio of CO_2e/€ of customer turnover, and 5 to emissions estimated using economic ratios (CO_2e/€), Crédit Agricole's overall score for the aviation sector is 2.89.

7 - D SCENARIO AND TARGET

MPP "Prudent" Scenario

The reference scenario selected for the decarbonization of the commercial aviation sector is the "Prudent" scenario developed by the MPP industry coalition and used within the framework of the Pegasus Guidelines. The MPP alliance was created by the Energy Transitions Commission (ETC) think tank, the Rocky Mountain Institute, the non-profit organization "We Mean Business Coalition" and the World Economic Forum. It aims to support the decarbonization of highly emitting industries. Aligned with a 1.5°C trajectory, its "Prudent" scenario is recognized by the NZBA. The 2020-2050 carbon budget of this scenario is almost identical to that of the International Energy Agency's NZE scenario (around 19.4 gigatons CO_2e), and incorporates annual air traffic growth of 2.5%. However, it intends to provide a more realistic pathway that takes into account disruptive technologies in the sector, whose development will accelerate from 2035 onwards. This is represented by a bell curve, where the sector catches up with the predictions of the NZE scenario by 2040, before becoming more efficient by 2050. MPP data (scope covering commercial aviation, with a WTW approach) is also more transparent, granular and sector-specific.2,5 %.

THE "PRUDENT" ROADMAP OF THE MISSION POSSIBLE PARTNERSHIP



MPP PRU scenario, with IATA historical traffic values 2020-2023

MPP, IATA 2023, RMI Analysis.

OUR COMMITMENT

Crédit Agricole Group's objective is to reduce the WTW carbon intensity of the Crédit Agricole CIB portfolio by 25% between 2019 and 2030, or by 37% compared to 2020, the reference year for the other sectors taken into account. The carbon intensity of the CACIB portfolio will thus amount to 750 gCO_2e/RTK, in line with the "Prudent" MPP scenario. It incorporates the assumption that the proportion of SAF used in fuel worldwide will increase to 6% by 2030, in line with the requirements of the European Commission. This assumption is optimistic: there are doubts around the development of production capacity in the next ten years (with probable geographical disparities). Nevertheless, certain companies have committed to a target of 10%.

7 - E LEVERS AND ACTION PLAN

Not all of the current decarbonization levers for the commercial aviation sector are available to Crédit Agricole CIB. For example, this is the case with operational efficiency (eco-piloting, optimization of air traffic, airline procedures, etc.).

In view of this, the Group's action plan is based on three key levers:

- Give priority to financing of new-generation aircraft (currently fourth-generation), which are the most fuel efficient. Therefore, the proportion of these aircraft in the CACIB portfolio must increase from 33% in 2019 (58% in June 2023) to more than 90% in 2030.

- Play an active role in the Sustainable Aviation Fuel value chain, because SAF will ultimately be a key factor in the sector's decarbonization. This applies to the Renewable Low Carbon Fuel Alliance working group, for example, which is made up of players and banks in the sector, and supported by the European Commission.

- Foster ongoing dialogue with customers on sustainability issues.

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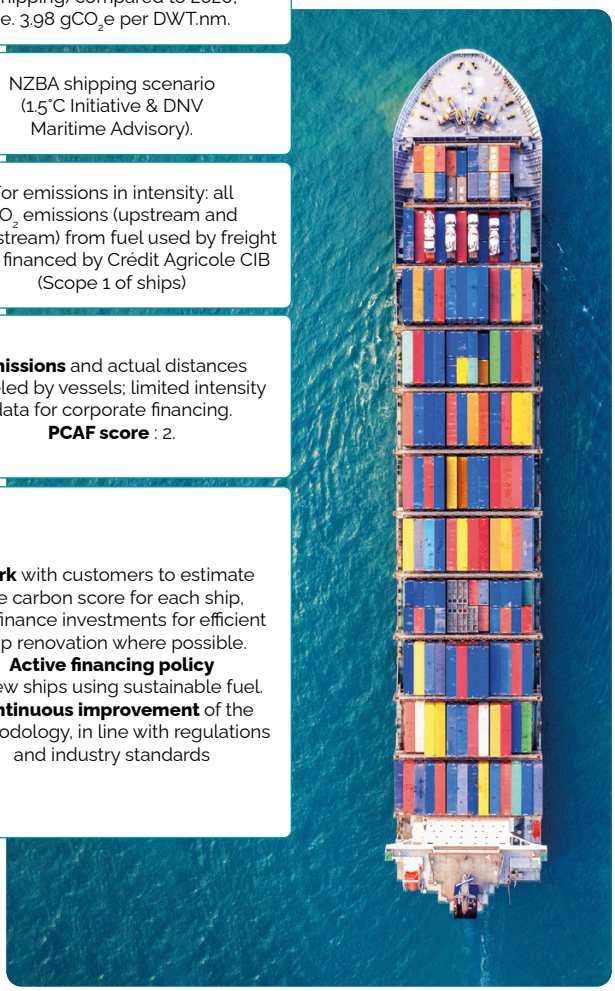
SHIPPING

ENTITY : CRÉDIT AGRICOLE CIB

8 - A SUMMARY OF THE SECTOR

Financing commitments related to 2022	€5.7 Bn (MLT on-balance sheet loans).
Starting point 2020	6.22 gCO_2e by maximum tonnage transportable per nautical mile (DWT.nm(1)), taking into account emissions from fuel production (Well-to-Wake approach - WTW).
Target for 2030	-36% carbon intensity of cargo ships (shipping) compared to 2020, i.e. 3.98 gCO_2e per DWT.nm.
Reference scenario	NZBA shipping scenario (1.5°C Initiative & DNV Maritime Advisory).
Scope	For emissions in intensity: all CO_2 emissions (upstream and downstream) from fuel used by freight ships financed by Crédit Agricole CIB (Scope 1 of ships)
Source and quality of data	**Emissions** and actual distances traveled by vessels; limited intensity data for corporate financing. **PCAF score** : 2.
Levers available to Crédit Agricole CIB	**Work** with customers to estimate the carbon score for each ship, and finance investments for efficient ship renovation where possible. **Active financing policy** of new ships using sustainable fuel. **Continuous improvement** of the methodology, in line with regulations and industry standards



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(1) Dead Weight Tonnage by nautical mile.

8 - B SCOPE OF ACTIVITY AND GREENHOUSE GAS

The scope of greenhouse gas emissions in the shipping sector covers CO_2e emissions from fuel used by ships.

With annual emissions of around 800 million tons of CO_2 for a total fleet of around 100,000 boats (including around 60,000 large ocean-going vessels, Crédit Agricole CIB market), according to IPCC data, the Shipping industry, a cornerstone of the global economy, is one of the "hard-to-abate" sectors. Decarbonizing this industry requires the development of new fuels and technologies, since replacing the current fleet is a long-term project.
To establish a global evaluation framework for the decarbonization of its shipping portfolio, Crédit Agricole co-founded the Poseidon Principles.
In line with the policies and aims of the International Maritime Organization (IMO, the sector's global watchdog), the Poseidon Principles represent the world's first independent sector-specific, climate alignment agreement between financial institutions. The signatories (35 banks to date) are using the data obtained to support shipping companies in developing investment strategies to promote decarbonization. This agreement has served as a model for other high-emitting sectors.
As a result, the emissions financed by Crédit Agricole relate to the entire Crédit Agricole CIB portfolio: with emissions from some 1,200 vessels financed on one side (Scope 1 of ships), and on the other, emissions from corporate financing (Scope 1 of customers). Medium-term, on-balance sheet outstandings for ships, and

medium-term on- and off-balance sheet outstandings for corporate financing have been taken into consideration.
With regard to emission intensity, this currently only applies to emissions from fuel used by ships of over 5,000 tons that carry cargo (Scope 1 of cargo ships). This includes upstream emissions linked to fuel production, in accordance with the so-called "Well-to-Wake" (WTW) approach, which covers all fuel emissions, from the extraction of the energy source to its combustion on board. This scope currently covers 63% of Crédit Agricole CIB's portfolio.
Passenger ships (ferries, cruises) are currently excluded, until the International Maritime Organization (IMO) publishes a measurement for carbon intensity (CII indicator) tailored to this specific asset category (which accounts for 2% of the sector's global emissions). This change is scheduled for 2025.

8 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

Choice of metric

The metric chosen is maximum transportable tonnage per nautical mile (Dead Weight Tonnage per nautical mile, DWT.nm), calculated in AER (Annual Efficiency Ratio), in accordance with the recommendations of the Poseidon Principles. It is expressed in grams of CO_2e ($gCO_2e/DWT.nm$). This approach takes into account a ship's total capacity, and thus favors those filled to full capacity. In accordance with the scope covered (WTW approach), the data includes emissions from ship travel and fuel production.
It thus prioritizes the cleanest fuels.

CALCULATION OF FINANCED EMISSIONS

For ships, financed emissions are calculated based on the CO_2e emissions of each ship. These are weighted by gross outstandings compared to the asset's value.

The PCAF methodology has been used to calculate the carbon intensity of ships. The carbon intensity of a boat is obtained by dividing financed emissions by "financed production". To calculate this "financed production", the figure for "maximum transportable tonnage x distance traveled" is weighted using the ratio of gross outstandings/asset value.
The overall carbon intensity financed by Crédit Agricole CIB is the ratio between the sum of financed emissions and the sum of financed "production" of financed vessels.

2020 BASELINE

6.22

$GCO_2E/DWT.NM$

CARBON INTENSITY OF FINANCED CARGO SHIPS INCLUDING ALL FUEL LIFE CYCLE EMISSIONS

Measurement quality

Real-world data is used on CO_2e emissions and the distance traveled by ships. This data is collected directly from shipping companies in accordance with the Poseidon Principles.
This data is currently limited due to a number of external factors: lack of suitable metrics for passenger transport; the inclusion of actual tonnage transported (and not maximum tonnage) by the International Energy Agency's NZE scenario; unpublished emissions from ships under 5,000 tons; lack of useable data for OEMs; intensity approach not applicable to ports; lack of intensity data on corporate shipowners & operator financing.
According to the PCAF scoring system, which assigns a score of 1 to emissions directly published by companies, 2 to emissions estimated via customer consumption volumes, 3 to emissions estimated via customer production volumes, 4 to emissions estimated using a ratio of $CO_2e/€$ customer turnover, and 5 to emissions estimated using economic ratios ($CO_2e/€$), Crédit Agricole's overall score for the shipping sector is 2.

8 - D SCENARIO AND TARGET

NZBA Shipping Scenario

The IMO scenario (IMO 2050 Scenario, compatible with global warming of less than 2°C), is not fully aligned with the commitments of the Net Zero Banking Alliance (NZBA). As a result, CACIB and nine other major shipping banks established the "1.5°C Initiative for Shipping", thus producing a common NZBA scenario for this sector: the NZBA Shipping scenario. These ten banks commissioned leading shipping classification company, DNV Maritime Advisory, to guide its development. Based on "ambitious and realistic" baselines, this scenario incorporates "bottom-up" trajectories: it is founded on concrete solutions (renovation of ships, reduction of their speed, development of sustainable fuels) which must be proactively developed by shipowners. The results are consistent with or slightly exceed the target of 1.5°C (less than 1.6°C). This scenario also provides more granular and transparent assumptions than the International Energy Agency's NZE scenario.

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OUR COMMITMENT

Crédit Agricole aims to reduce the intensity of its financed emissions from shipping transport by 36% between 2020 and 2030, based on a Well-to-Wake scope. The carbon intensity of cargo shipping must therefore fall to 3.98 $gCO_2e/DWT.nm$ by the end of the decade. This commitment is in line with the NZBA Shipping scenario, as well as the European FuelEU Maritime legislation. This commitment has been made subject to the availability of alternative fuels and the implementation of speed limit reductions by ship charter companies, two crucial levers over which shipowners have no (for the first lever), or little (for the second), influence.

8 - E LEVERS AND ACTION PLAN

A number of the decarbonization levers for the shipping sector not available to Crédit Agricole. They do not yet apply to all ships, and may vary in effectiveness depending on the age and type of vessel (renovation, speed reduction, etc.). As a result, Crédit Agricole's action plan is based on three key levers:

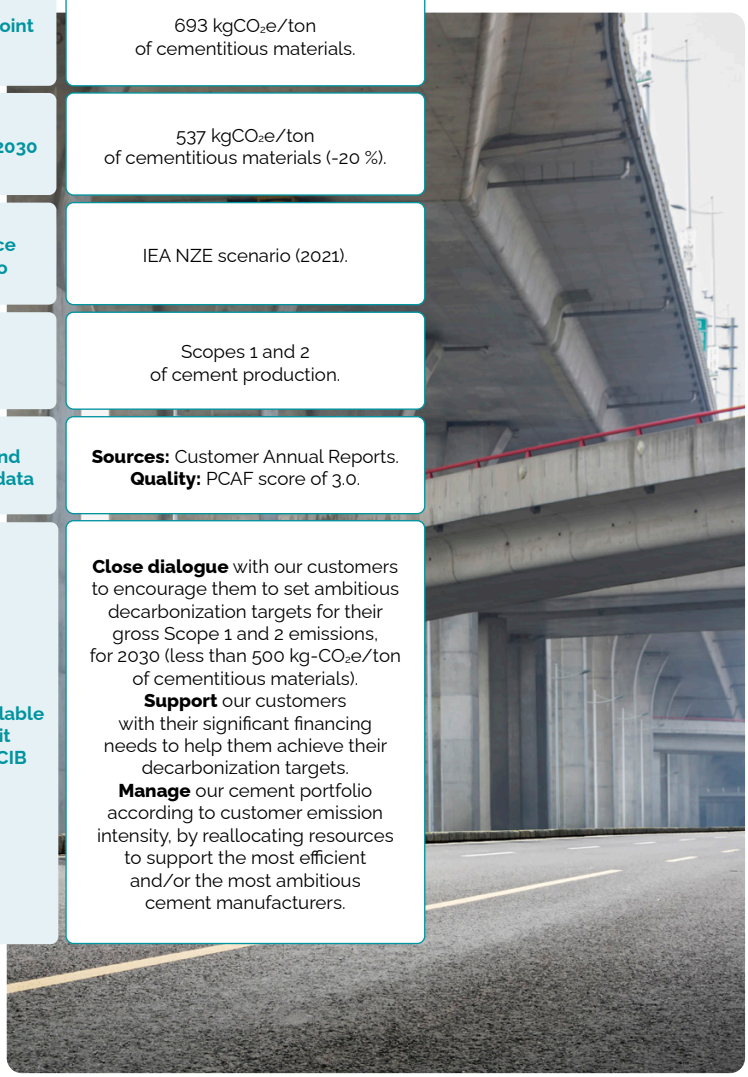
- **Estimate,** in close collaboration with customers, the projected carbon score for each financed or future vessel, and implement, on a boat-by-boat basis, measures to finance the necessary investments (retrofit financing) for ship renovation where possible. This work will mainly be carried out during traditional ship refinancing operations.
- **Develop** an active policy for financing the construction of new ships that use sustainable fuel, in cooperation with major export credit agencies. This involves both supporting customers with their orders for new-generation ships, and accelerating the decommissioning process for the oldest vessels in the fleet.
- **Implement** a continuous improvement process for the methodology, to ensure that it is updated in line with regulatory and industry requirements..

CEMENT

ENTITY : CRÉDIT AGRICOLE CIB

9 - A SUMMARY OF THE SECTOR

Financing commitments related to 2023	€0.7 Bn (on- off-balance sheet MLT loans).
Starting point 2020	671 $kgCO_2e$/ton of cementitious materials..
Crossing point 2023	693 $kgCO_2e$/ton of cementitious materials.
Target for 2030	537 $kgCO_2e$/ton of cementitious materials (-20 %).
Reference scenario	IEA NZE scenario (2021).
Scope	Scopes 1 and 2 of cement production.
Source and quality of data	**Sources:** Customer Annual Reports. **Quality:** PCAF score of 3.0.
Levers available to Crédit Agricole CIB	**Close dialogue** with our customers to encourage them to set ambitious decarbonization targets for their gross Scope 1 and 2 emissions, for 2030 (less than 500 kg-CO_2e/ton of cementitious materials). **Support** our customers with their significant financing needs to help them achieve their decarbonization targets. **Manage** our cement portfolio according to customer emission intensity, by reallocating resources to support the most efficient and/or the most ambitious cement manufacturers.



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9 - B SCOPE OF ACTIVITY AND GREENHOUSE GAS

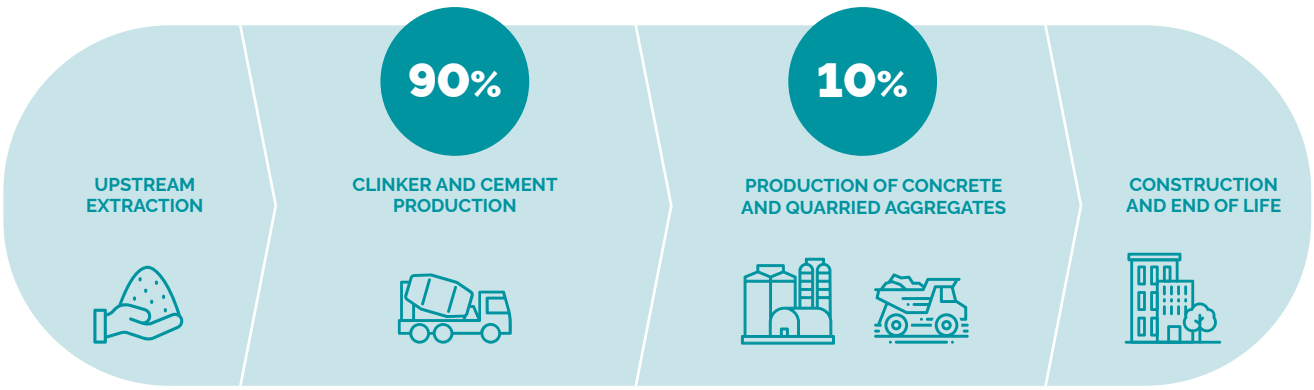
The scope for our decarbonization target covers the cement production sector. Cement production is responsible for 8%[1] of global GHGs (Scope 1).
Emissions linked to this activity are considered "hard-to-abate", due to the difficulty of implementing technically complicated and costly decarbonization measures (reduction of clinker ratio, capture of emissions via CCUS[2]).

Emissions from the cement value chain primarily come from the production of clinker and cement, which accounts for almost 90% of emissions, compared to around 10% for the downstream part of the value chain for the production of concrete and aggregates. Consequently, we have opted to focus on the production of cement and clinker, and, for the moment, to exclude the production of concrete and other materials downstream of the value chain.

Around 2/3 of the emissions from the production of cement and clinker are generated via the chemical process of limestone decarbonization required to produce clinker. The remaining 1/3 comes from heat, as clinker is fired at a temperature above 1,400°C during this process, and from the electricity used for mixing and grinding the materials[3].

(1) Chatham House Report (2018). Making Concrete Change: Innovation in Low-carbon Cement and Concrete.
(2) Carbon Capture, Utilization and Storage.
(3) Climate Bonds Initiative - Concrete policies to underpin the cement transition.

Emissions from the cement and clinker value chain



9 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

CHOICE OF METRIC

The carbon metric for this sector is based on measuring the intensity of gross Scope 1 and 2 emissions ($kgCO_2e$/ton of cementitious materials). This metric is based on several methodological choices.

- **Choice for production:** the metric used for production is "ton of cementitious materials". This metric, defined by the Global Cement and Concrete Association (GCCA), is based on net clinker production (sum of the mass of clinker produced and the mass of additives required for cement production), to avoid double counting the clinker sold before cement is produced. It thus covers the physical production of cement, while ensuring that the intensity values of cement manufacturers can be compared, regardless of the extent of their integration in the value chain.
- **Choice for emissions:** the emissions take into account Scope 1 and Scope 2 of cement manufacturers, which includes emissions linked to the limestone decarbonization process and to the energies used for the production of clinker and cement. Emissions are expressed as the gross emissions linked to alternative fuels (i.e. nonorganic waste such as plastic materials) to provide an exhaustive assessment of all emissions linked to cement production. This metric was also chosen to encourage cement manufacturers to report their emissions in a similar way, by setting decarbonization targets based on their gross Scope 1 and 2 emissions, as current commitments mainly relate to net Scope 1 emissions from the combustion of alternative fuels.

CALCULATION OF FINANCED EMISSIONS

The carbon intensity associated with our financing of cement production is calculated, as with the other sectors, in accordance with the PCAF methodology, with, on the one hand, the calculation of the financed cement production, and, on the other hand, the calculation of absolute emissions financed in our cement portfolio. The attribution factor has been calculated using the same method as for the previous sections, for each customer, with:

- **As the numerator,** our exposure of drawn and undrawn credit, maturity of > 1 year.
- **As the denominator,** Enterprise Value Including Cash (EVIC), as defined previously.

Data on CO_2 emissions and cementitious materials production was collected directly from customer publications. As cement manufacturers generally report their Scope 1 intensity, the gross Scope 1 and 2 intensity was calculated from data taken from customer publications (using the gross Scope 1 intensity and absolute emissions data for Scopes

1 and 2). The customer's production and gross Scope 1 and 2 emissions are each multiplied by the attribution factor associated with the customer, to calculate their financed production and financed emissions (absolute, for the year) . This data is then added together for all customers included in the scope, to obtain the total financed production and the total financed emissions. These two values are then divided to obtain the financed carbon intensity in $kgCO_2e$/ton of cementitious materials for the cement portfolio.

2020 BASELINE

Our credit exposure (drawn and undrawn, maturity of >1 year) for loans to cement-producing companies (taking into account CACIB's exposure only, which accounts for around 60% of the Group's cement production exposure) amounted to €0.7 billion in 2020.

BASELINE (CACIB ONLY) :

671

$KGCO_2E$/TON OF CEMENTITIOUS MATERIALS

IN 2020

This represents approximately 0.4% of CACIB's financing. However, this highly-emitting sector may account for 3 to 4% of CACIB's financed emissions. This financing is linked to a total financed intensity of 671 $kgCO_2e$/ton of cementitious materials, for gross Scope 1 and 2 emissions. This decision to report gross emissions increases our financed carbon intensity in comparison to that of our peers. This reflects our commitment to provide transparent reporting on all emissions associated with cement production, including emissions from the combustion of alternative fuels (non-organic waste), and to encourage cement manufacturers to set targets based on their gross emissions, in order to promote decarbonization levers other than increasing the share of alternative fuels.

MEASUREMENT QUALITY

Having carried out significant work on data collection, for our 2020 baseline, we were able to collect production and emissions data published by cement manufacturers. According to the PCAF scoring system, which assigns a score of 1 to emissions directly published by companies, 3 to emissions calculated from physical production data, and 5 to emissions estimated using economic ratios (CO_2/€), our overall score for this sector is 3 (weighted by exposure).

PCAF SCORE	Description	Exposure
1	Actual Scope 1 emissions.	-
2	Emissions calculated based on customer consumption volumes.	-
3	Emissions calculated based on customer production volumes.	100%
4	Emissions estimated using a ratio of CO_2e/€ customer turnover.	-
5	Emissions estimated using a ration of CO_2e/€ exposure.	-
Weighted PCAF score of our portfolio		**3**

9 - D SCENARIO AND TARGET

IEA NZE SCENARIO

The IEA's NZE scenario states that optimizing the use of cement and concrete will play an essential role in decarbonizing the sector. As such, demand for cement should remain stable, at around 4,000 Mt, between 2020 and 2050, despite the increased surface area of buildings.

Certain technologies that hold the key to decarbonizing the sector are already in use today, with improvements in energy efficiency, the use of alternative fuels, and the reduction of the "clinker-to-cement" ratio. These technologies will be largely responsible for reducing the sector's emissions between 2020 and 2030.
From 2030 to 2050, other technologies, in particular CCUS ("Carbon Capture, Utilization and Storage") technologies, will play an essential role in reducing emissions associated with the cement production process itself. CCUS-type technologies will thus lead to a 55% reduction in these emissions in 2050 compared to 2020.
Other decarbonization measures, such as the direct electrification of cement kilns, should help reduce the sector's emissions from 2040 onwards.

OUR COMMITMENT

Our target of a 20% reduction in our gross Scope 1 and 2 carbon intensity is slightly lower than the 23% reduction predicted by the IEA scenario. However, the scenario projections are in gross Scope 1 intensity, rather than Scopes 1 and 2, so they are not comparable with our target. In addition, we have also committed to reviewing our target in 2025, so that it can be updated to reflect changes in the decarbonization commitments of cement producers.

9 - E LEVERS AND ACTION PLAN

In order to achieve this objective, we have based our action plan on two key levers:

Strengthening dialogue with our customers, and encouraging them to set ambitious decarbonization targets, based on their gross Scope 1 and 2 emissions (less than 500 $kgCO_2e/t$).
At the same time, we will continue to support our clients with the massive financing needed to achieve their decarbonization objectives, and implement the various decarbonization measures required in the sector.

Managing our portfolio in accordance with the carbon intensity targets set by customers, by reallocating resources to support the most committed cement manufacturers.

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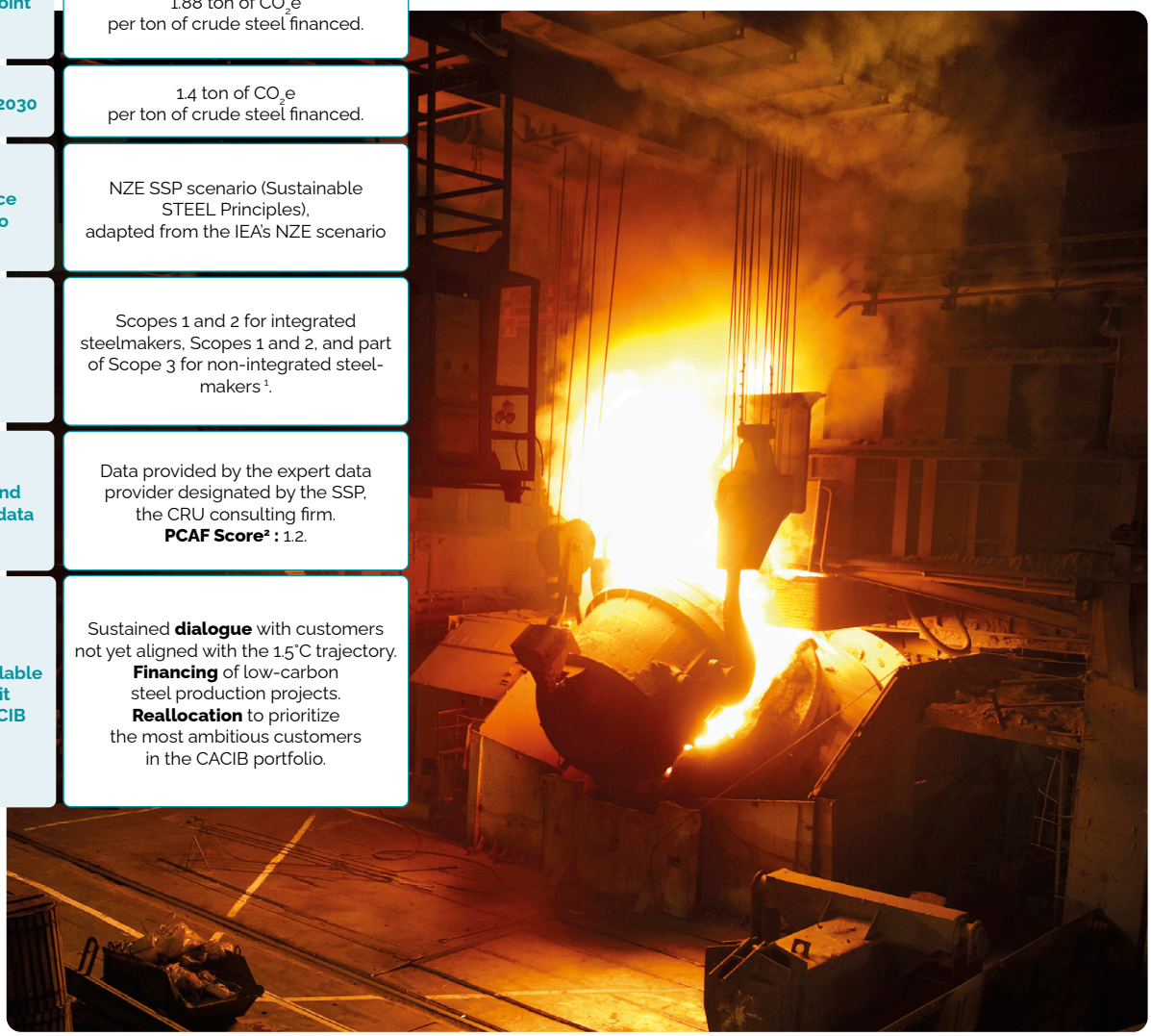
STEEL

ENTITY : CRÉDIT AGRICOLE CIB

10 - A SUMMARY OF THE SECTOR

Financing commitments related to 2023	€1.4 Bn (on- and off-balance sheet MLT loans).
Starting point 2020	1.88 ton of CO_2e per ton of crude steel financed.
Target for 2030	1.4 ton of CO_2e per ton of crude steel financed.
Reference scenario	NZE SSP scenario (Sustainable STEEL Principles), adapted from the IEA's NZE scenario
Scope	Scopes 1 and 2 for integrated steelmakers, Scopes 1 and 2, and part of Scope 3 for non-integrated steel-makers [1].
Source and quality of data	Data provided by the expert data provider designated by the SSP, the CRU consulting firm. **PCAF Score[2] :** 1.2.
Levers available to Crédit Agricole CIB	Sustained **dialogue** with customers not yet aligned with the 1.5°C trajectory. **Financing** of low-carbon steel production projects. **Reallocation** to prioritize the most ambitious customers in the CACIB portfolio.



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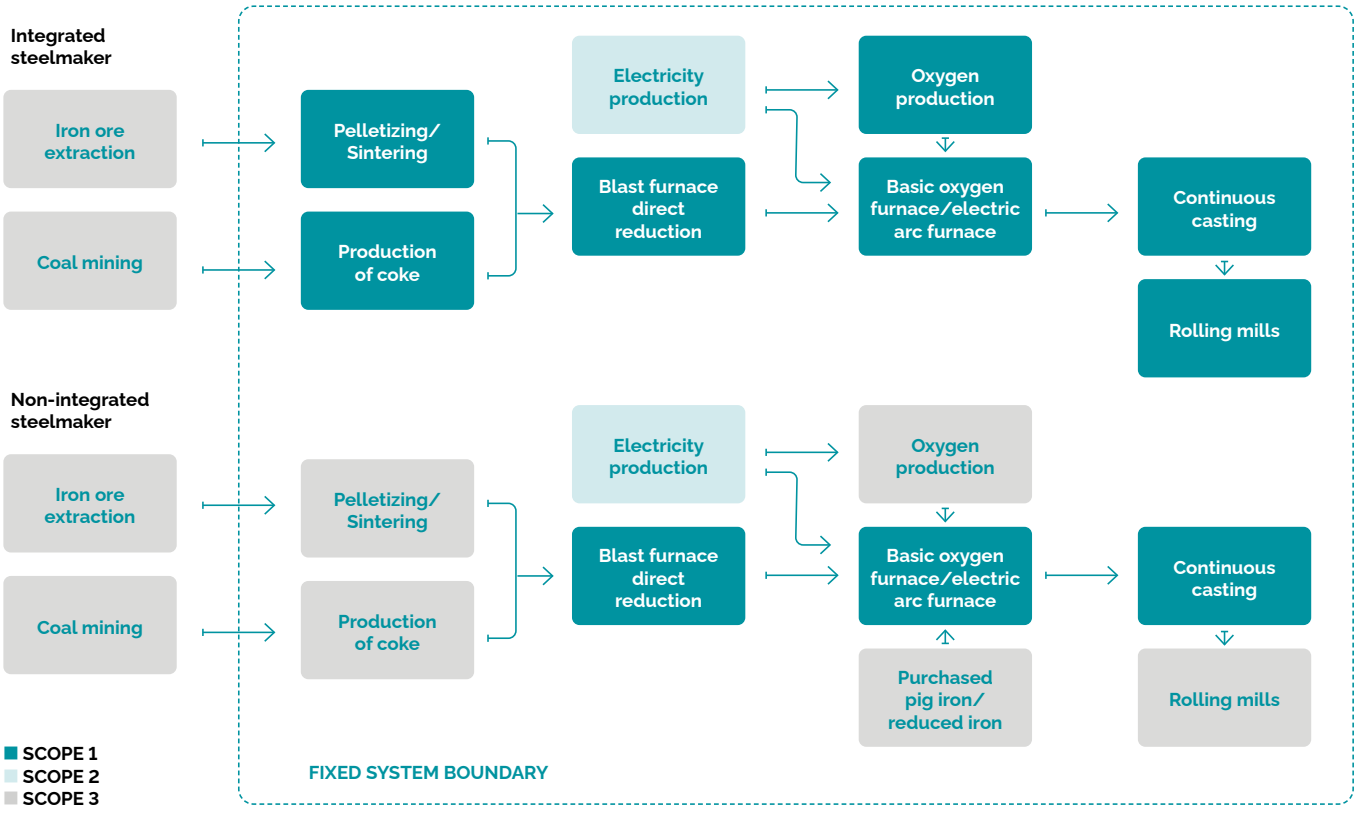
(1) Fixed system boundary defined by the SSPs. (2) In 2020. (3) IEA NZE 2050 (September 2023).

SCOPE OF EMISSIONS SET BY THE SSPs
(FIXED SYSTEM BOUNDARY)



THE MAIN METHODS OF STEEL PRODUCTION

The scope chosen for the decarbonization target is the steel production activity of the Crédit Agricole CIB portfolio. There are three main methods of producing steel: according to the International Energy Agency, two thirds of steel is produced by reducing iron ore from metallurgical coal (coke), using a basic oxygen furnace to transform liquid cast iron into steel (BF-BOF); the second method involves the direct reduction of iron from natural gas (DRI), using an electric arc furnace (EAF), which accounts for less than 10% of production according to the IEA3); and, lastly, less than a quarter of steel is produced by recycling scrap metal in an electric arc furnace.

The IEA also reports that one ton of steel produced using a blast furnace emits 2.2 tons of CO_2; a ton of steel produced via direct reduction emits 1.4 tons of CO_2; and a ton of steel recycled in an electric arc furnace, generates 0.3 tons of CO_2.

Total steel production (nearly 2 billion tons) could increase by 30% by 2050. It is currently responsible for approximately 6%[3] of the global greenhouse gas emissions caused by human activity. These emissions are considered "hard-to-abate", primarily because of the use of coke in blast furnaces, which is the only method that produces quality crude steel in sufficient quantities; as well as the complexity of implementing technological measures to decarbonize the sector (substitution technologies for blast furnaces, capture-storage or use of CO_2 (CCUS), which requires significant investment over the long term.

10- B SCOPE OF ACTIVITY AND GREENHOUSE GAS

To decarbonize this sector, Crédit Agricole has signed up to the Sustainable STEEL Principles (SSPs), inspired by the Poseidon Principles of the shipping sector. These "Sustainable Steel Principles" are based on a "Fixed System Boundary" to define the scope of emissions for crude steel producers. Apart from the extraction of iron ore and coal, the entire value chain is taken into account, from coke production to the rolling mill, whether the steelmaker is integrated or not. For a fully integrated producer, the entire value chain is covered by Scope 1, with the exception of the purchase of electricity (Scope 2). For a non-integrated producer, Scope 1 may include the blast furnace, for example, the basic oxygen furnace and the continuous casting of liquid steel, with Scope 2 including the purchase of electricity, and Scope 3 the rest of the value chain.

Signed in 2022, together with five other major banks (representing a combined loan portfolio of around $23 billion and a market share of more than 11%), the broader aim of the SSPs is to play a leading role in the transition of the steel sector as a whole, and to provide a methodology that is updated in line with future developments relating to data and scenarios.

10 - C METRICS AND CALCULATION OF FINANCED EMISSIONS

Choice of metric

The carbon metric chosen is intensity in CO_2 equivalent of a ton of raw steel produced, as it comes off the rolling mills. It falls within the scope defined by the SSPs: Scope 1+2 for integrated producers, Scope 1+2 + part of Scope 3 for non-integrated producers. It thus covers and enables the steering of financed raw steel production, while allowing steelmakers' intensity values to be compared, regardless of the extent of their integration in the value chain.

Calculation of financed emissions

The portfolio's carbon intensity has been calculated using the PCAF methodology. Each customer has an attribution factor: with the numerator being drawn and undrawn credit exposure, with maturity of more than one year; and the denominator being EVIC (Enterprise Value Including Cash). Steel production and its CO_2 emissions are multiplied by the attribution factor to calculate the production and emissions financed by the bank. The sum of the results from all our customers provides the total production and emissions financed by the bank. Financed carbon intensity is calculated using the emissions/production ratio.

2020 baseline

The financing taken into account corresponds to an estimated financed carbon intensity of 1.88 tCO_2e per ton of crude steel produced in 2020.

Measurement quality

Data on the steel production levels and CO_2 emissions of each producer has been taken directly from the expert firm CRU, official supplier of SSP data. These are actual figures, not estimates. According to the PCAF scoring system, which assigns a score of 1 to emissions directly published by companies, 3 to emissions calculated from physical production data and 5 to emissions estimated using economic ratios ($CO_2e/€$), Crédit Agricole's overall score for the steel sector is 1.2.

10 - D REFERENCE AND TARGET SCENARIO

NZE scenario of IEA

The reference scenario used for steel production is the NZE by 2050 scenario of the International Energy Agency. However, this scenario only takes into account Scope 1 of the iron and steel sector.
The scope taken into account by Crédit Agricole is thus broader (Scope 1+2 of the sector), reflecting our desire to take action and report all of the emissions associated with steelmaking.
In the IEA's net zero trajectory, the steel sector will be one of the last sectors still using coal in 2050. The reason for this is coal's importance as an iron reduction agent and in providing the carbon needed to make steel.
Decarbonization of the sector will require, firstly, improvements in energy efficiency, the development of the recycled steel segment and the share of scrap-EAF in production, the development of direct reduction processes using gas (DRI), and the electrification of ancillary services.
From 2030 onwards in particular, new technologies are expected to have an impact: reduction of iron with low-carbon hydrogen (which will also require a major increase in hydrogen production), and the adoption of CO_2 capture, storage (and use) technologies by the blast furnace sector.

OUR COMMITMENT

The target of reducing the carbon intensity of Crédit Agricole CIB's portfolio by 26% between 2020 and 2030 (objective of 1.4 tons of CO_2e per ton of crude steel financed compared to 1.88 in 2020) was set in accordance with the scope of activity defined by the SSPs. For 2022, the CACIB alignment score, a metric defined by the SSPs in line with a 1.5°C trajectory, is 0.17. A negative or zero score means alignment with the 1.5°C objective for 2050. A commitment has been made to review CACIB's 2030 objective in 2025, in order to adjust this target to reflect changes in the commitments made by steel producers, as with the cement sector.

ISTOCK

10 - E LEVERS AND ACTION PLAN

To achieve its objective, Crédit Agricole's has based its action plan on three key levers:

- **Sustained dialogue** with clients not aligned with a 1.5°C trajectory (sharing information on how their score aligns with climate trajectories; encouraging customers to set new targets, in line with climate scenarios) to review, together with customers, how Crédit Agricole CIB can support them in their decarbonization: increasing their capacity to use recycled steel, replacing blast furnaces with low-emission technologies, etc..
- **Development** of financing projects for low-carbon steel production technologies.
- **Management** of the steel portfolio, with resources reallocated to the most ambitious customers.

OUR COMMITMENTS IN OUR 10 MATERIAL SECTORS FOR THE PERIOD FROM 2020(1) TO 2030

Electricity

-58%

224 >> 95

gCO_2e/kWh

Residential real estate

Commitment of resources*

22.4 >> 12.4

$kgCO_2e/m^2/year$

Commercial real estate

-40%

36 >> 22

$kgCO_2e/m^2/year$

Aviation

-25%

1003 >> 750

gCO_2e per RTK

Automotive

-50%

190 >> 95

gCO_2/km

Agriculture

Supporting sector roadmaps**

Shipping

-36%

6.22 >> 3.98

gCO_2e per DWT.nm

Steel

-26%

1.88 >> 1.4

tCO_2e/t

Cement

-20%

671 >> 537

$kgCO_2e/t$

Oil & Gas

-75%

24.3 >> 6.1

$MtCO_2e$

**Supporting property owners to help achieve France's objective of 12.4 $kgCO_2e/m^2$ per year by 2030 (CRREM FR, 2021 version): decarbonization will require the mobilization of all stakeholders, and the commitment of every property owner, working in synergy with local companies, public policy incentives and the structuring of an efficient building sector.*

*** Supporting the agricultural sector in its decarbonization process while strengthening food sovereignty, helping to implement the roadmaps set by the profession and its sectors, at individual farm level and for the entire French farming sector.*

(1) For the Aviation sector, 2019 was used as the reference year, as 2020 was not representative of actual customer activity due to the Covid pandemic.

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