

L'ECONOMISTE

Sustainable Development

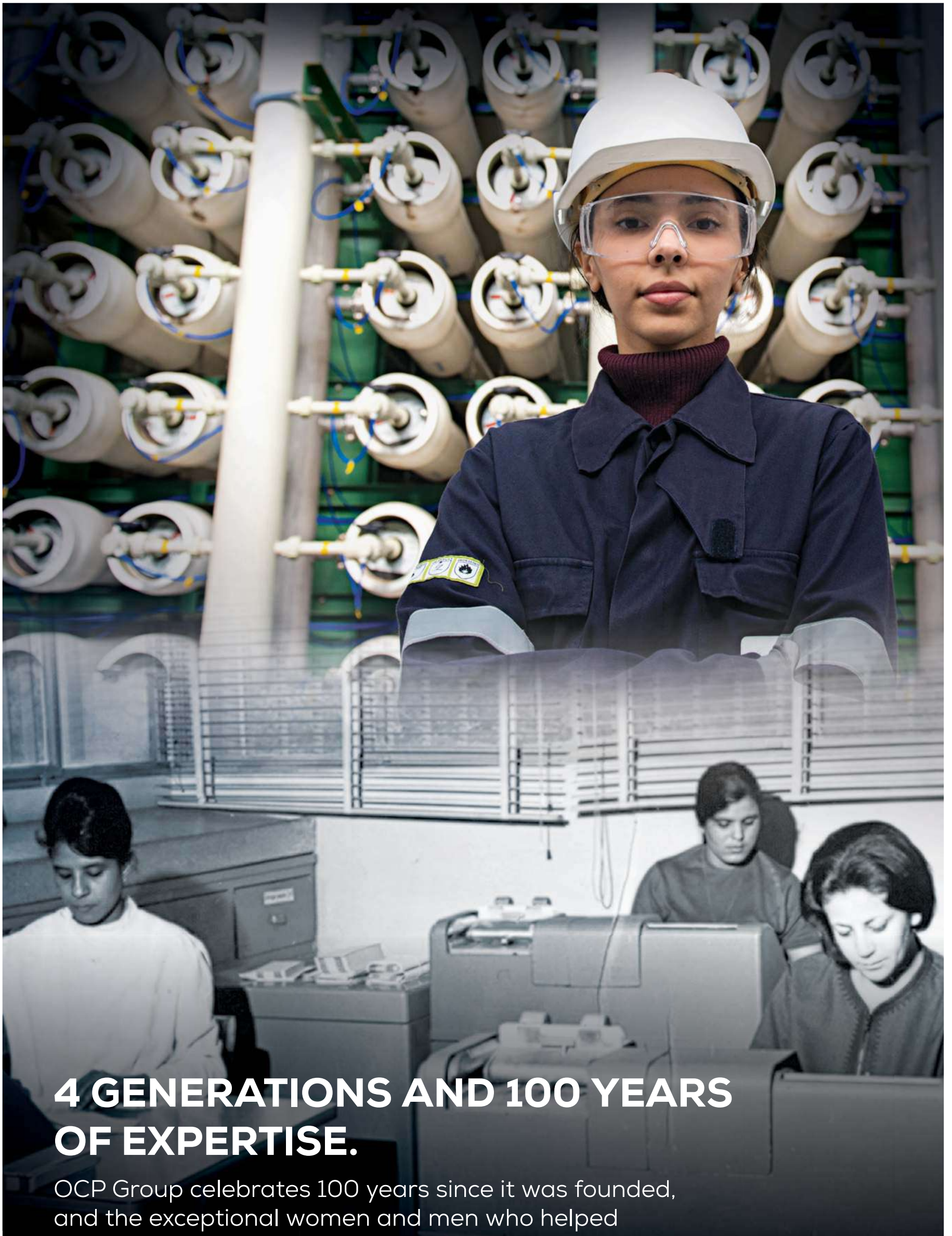


COP27
SHARM EL-SHEIKH
EGYPT 2022

Special
edition

Major climate issues Commitments and financing





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EDITORIAL **Goal #1** Meriem OUDGHIRI

PROTECTING resources, polluting less by using appropriate techniques, wasting less water and energy, consuming better... that's what sustainable development is all about. For a long time now, L'Economiste has made it its pet subject, by accompanying, through different themes and files, market players in their learning, and by explaining again and again that the vaguest concepts end up being understood and assimilated. Since its creation, L'Economiste has made it its philosophy. To go further and open new windows, the editorial staff of L'Economiste is mobilizing, like other institutions, associations, and international media, by initiating a new special issue, dedicated to this strategic field and responding to the climate challenges. This new medium is fully in line with the 17 Sustainable Development Goals (SDGs) of the UN and has adopted the principles related to those goals.

Each issue will be released bimonthly. The first is the one you are holding in your hands, published in conjunction with COP27, which is being held in Sharm El-Sheikh from November 06 to November 18, 2022. The two SDGs covered in this first issue are SDG7 (Ensure access to affordable, reliable, sustainable and modern energy for all) and SDG17 (Partnerships for the Goals). Exceptionally, an English version of this first issue of L'Economiste Sustainable Development will be available. In all this movement and global race against global warming, Morocco is pushing its pawns and positioning itself by making the ambitious challenge of renewable energies and major transformational projects, with its number goal #1 being to succeed in its green policy. □

Commitments of the parties

Between Glasgow and Sharm El-Sheikh, little progress

■ Commitments to reduce greenhouse gas emissions have changed little

■ The question of financing at the heart of the debates

AFTER a lackluster COP26 in Scotland, where progress fell short of expectations, the 200 signatory countries of the Glasgow Pact had until September 23 to submit new greenhouse gas reduction commitments, but only 23 countries have submitted a new climate plan for 2030, and for the most part, not with enhanced objectives, but only with more details concerning the means implemented.

However, the 6th IPCC report published at the end of 2021 sounded like an alert: the IPCC meant that the trajectory taken was above that which Humanity had to take to contain global warming at 1.5 degrees Celsius.

It must be said that geopolitics has entered the climate debate. The war in Ukraine, which caused the world price of oil and especially natural gas to soar, has put the short-term goals of combating inflation and the loss of household purchasing power ahead of climate action. Even if in Europe, for example, the current crisis has forced the European Union to raise its goals in terms of renewable energies and energy efficiency.

Among the few countries that have reviewed their contribution are naturally Egypt, host country of COP27, and the United Arab Emirates, which will host the next COP. Egypt, whose commitments are still very insufficient, has announced a target of 42% renewable energies by 2035 in its energy mix. It is also committed to reducing emissions from its power generation sector and its oil and gas sector, but by linking those aspirations to financial conditions: the debate on the 100 billion dollars expected by developing countries is clearly posed. The United Arab Emirates, which does not have a funding problem, raised its reduction target for 2030 from 23.5% to 31%.

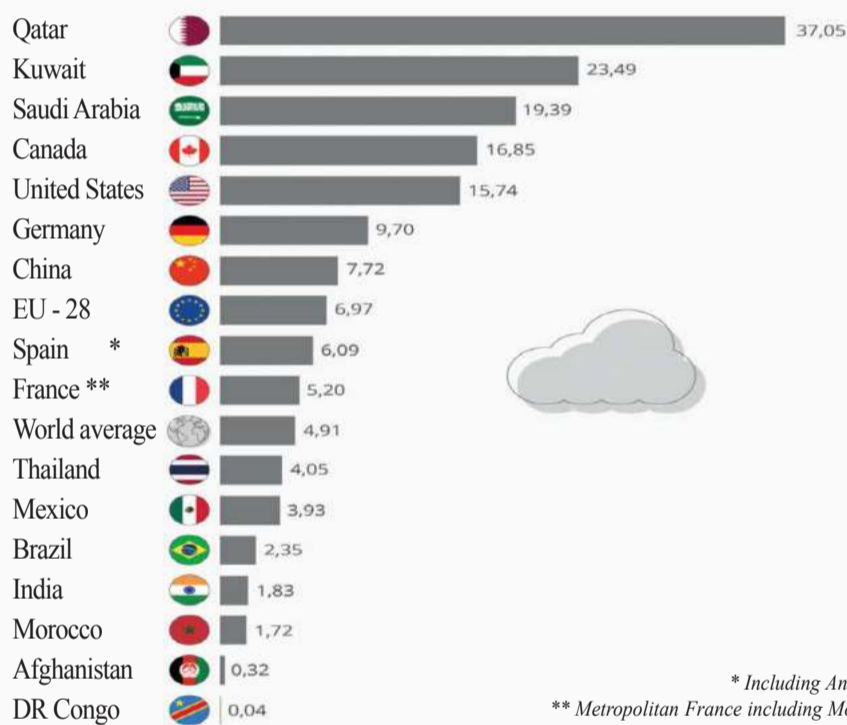
Indonesia, a country of 270 million people, raised its reduction target from 29 to 32%. The country also calls for funding in order to go to a



The war in Ukraine, which has caused global oil and especially natural gas prices to soar, has put the short-term goals of combating inflation and the loss of household purchasing power ahead of climate activities (Ph. AFP)

CO2 emissions per capita across the world

CO2 emissions per capita in a selection of countries in 2017 (in tonnes)



* Including Andorra

** Metropolitan France including Monaco

Source : European Commission

43% reduction. On the other hand, Indonesia refused to make a concrete commitment on deforestation.

Australia, whose political alternation ended the term of a climate skeptic politician, raised its reduction target

Ismail EL WADI

A rapidly changing contribution to emissions

DEVELOPED countries are singled out for their contribution to global warming. Since the Industrial Revolution began in the 19th century, the accumulation of greenhouse gases that is due to the rise of these economies is still palpable today. But whether it is the United States or the European Union, these emissions have started to decline, since the beginning of the 21st century for the United States, and since the 1980s for the European Union.

On the other hand, for China, which has become the leading

emitter of greenhouse gases with more than a quarter of them (26.9%), the progression is spectacular. Emissions began to rise from the 1950s with China's awakening, accelerating dramatically over the past three decades. India is following a similar trend, although with much less intensity.

The result is that China, the world's most populous country, which had a very low or per capita contribution three decades ago, is at half the per capita contribution of the United States (7.72 tons per capita for China versus 15.75 for

from 26-28% to 43%. Among the major emitters, no progress has been made. China, the world's largest emitter, has not raised its ambition. The United States has not revised its targets either. But the good news comes as President Joe Biden successfully pushed through a nearly \$400 billion ten-year plan to cut greenhouse gas emissions by 40% by 2030.

For the European Union, it will be a blank year. The EU is working to raise its goals, but will not make an announcement before 2023. Finally, India formalized the promises made by its Prime Minister at COP26 in Glasgow.

However, overall, the commitments currently made by nations will not be enough to limit global warming to 1.5 degrees Celsius. They rather put us on a trajectory of 2.4 degrees Celsius, according to the climate site «Climate Action Tracker», which analyzes in real time the commitments of the parties.

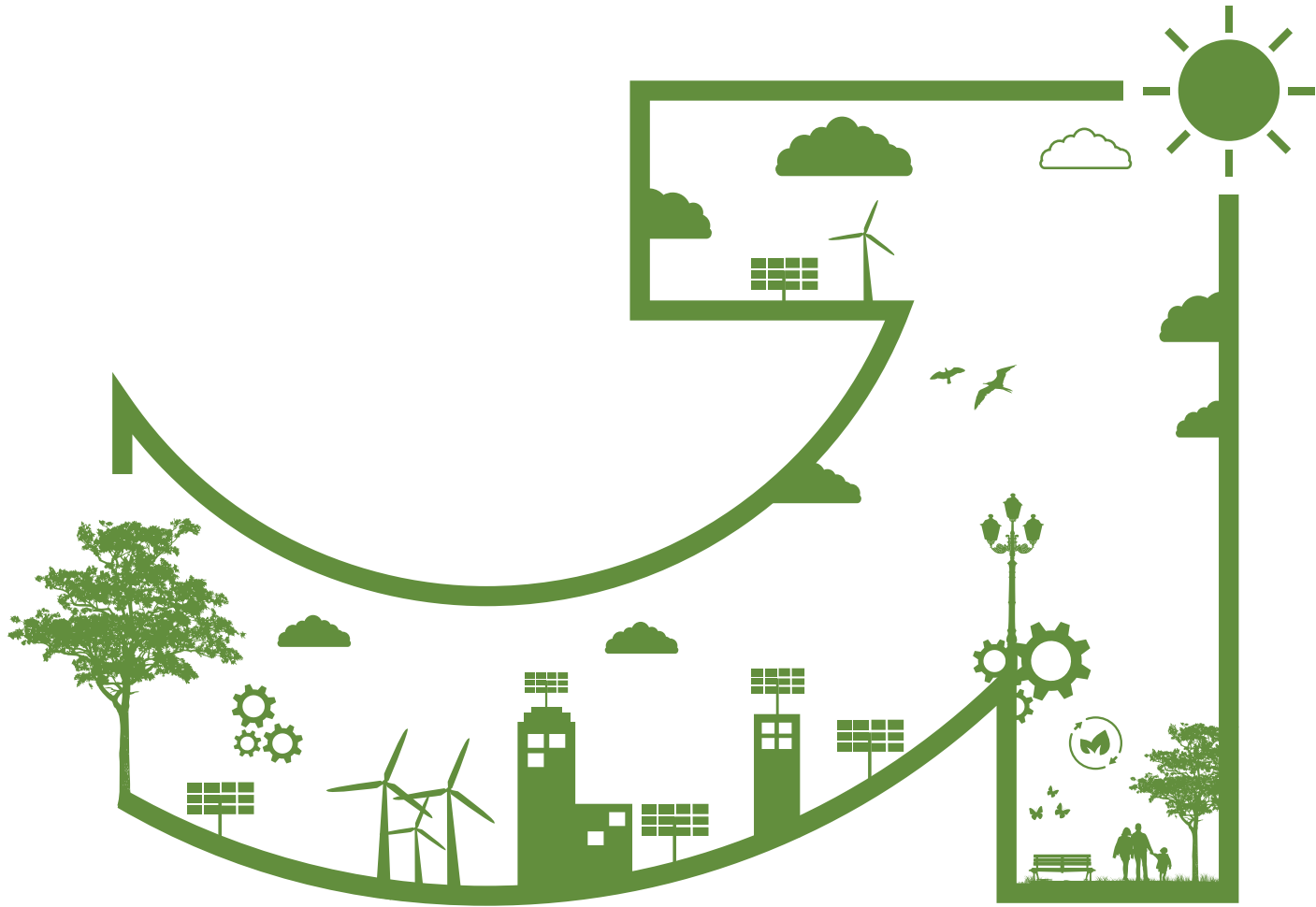
The Glasgow Climate Pact, signed by 197 countries, listed a series of non-binding commitments that aimed to reduce global CO2 emissions by 45% by 2030, compared to 2010 levels. and global diplomatic tensions complicate the job. After Nancy Pelosi's visit to Taiwan, China announced the suspension of climate cooperation with the United States. Cooperation between the two main greenhouse gas emitters is one of the drivers of global climate action. □

the United States), and exceeded the European Union (6.97 tonnes).

The «Middle Kingdom» does not plan to reverse its emissions curve until 2030, which should lead to the accumulation of considerable quantities of greenhouse gases in the atmosphere. India, for its part, advances its very low contribution per capita (1.83 tonnes per capita). For this country destined to become the most populous on the planet, this low contribution per capita appears as a justification for the increase in its global emissions. □

CAISSE DE DÉPÔT ET DE GESTION

A STRONG COMMITMENT TO SUSTAINABLE DEVELOPMENT



A leading historical player in the economic and social development of the Kingdom, the CDG Group reiterates its commitment to societal and environmental issues of Morocco by adopting a Group Sustainable Development Charter.

Thereby, the CDG Group adopts a responsible approach based on the following five principles :

- ① Contribute to economic and social development and to the creation of long-term value
- ② Preserve and strengthen environmental and climate balance
- ③ Working for well-being and financial and social inclusion
- ④ Promote good governance and internal exemplarity
- ⑤ Enhance human capital

For Future Morocco

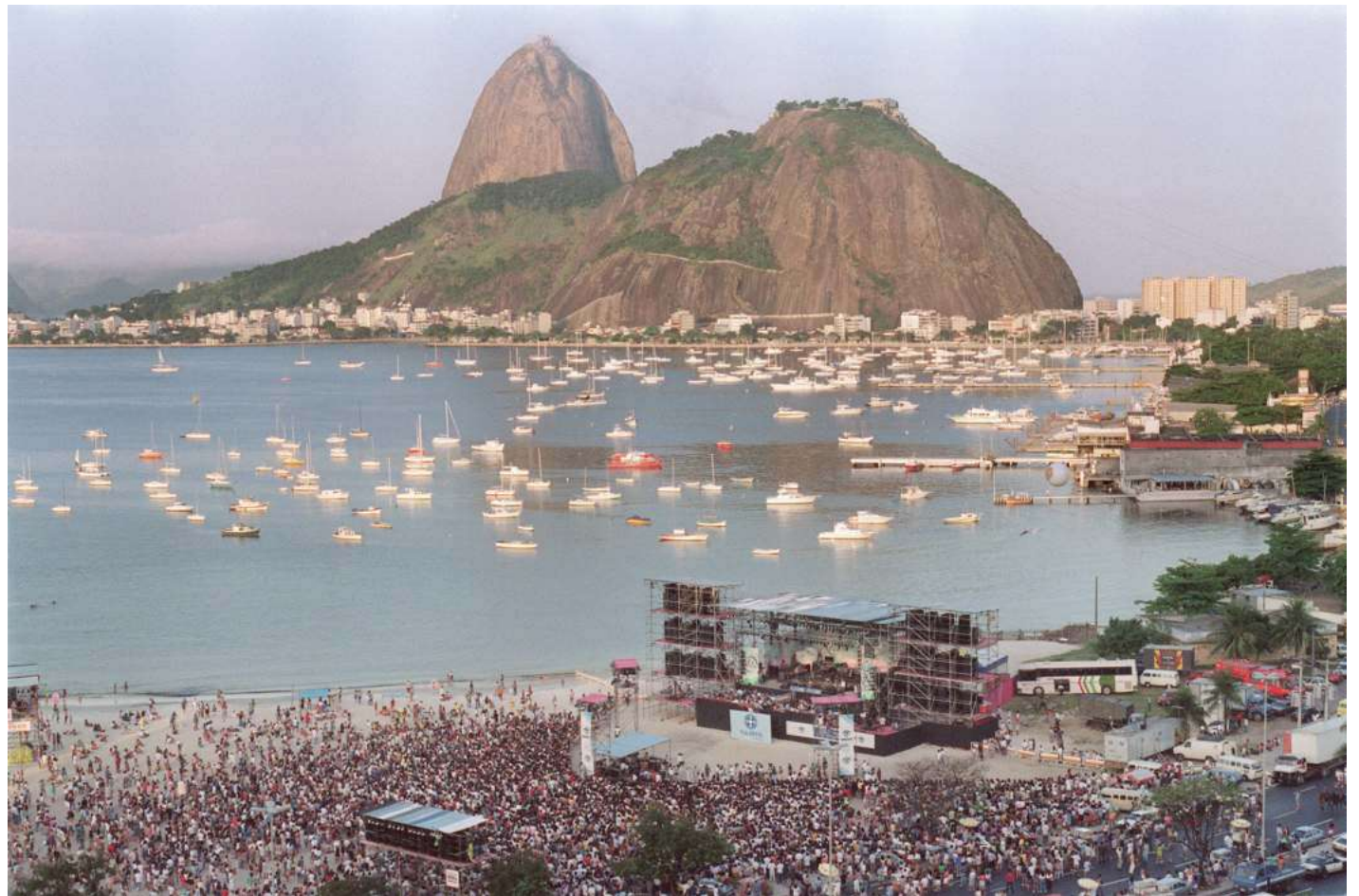
From one COP to another, the difficult

■ The key dates to fully understand the commitments, the standoffs, and the issues

■ Within the COPs, more than 30 years of laborious process

■ In Egypt, geopolitics is likely to weigh with all its weight

FOR a little over thirty years, the countries of the world have been meeting at a summit, organized by the United Nations Framework Convention on Climate Change, to organize the fight against climate change. From summit to summit, the conferences have sought agreement on the adoption of a legal instrument or a legally binding outcome, as well as financing mechanisms, particularly for the most vulnerable countries. The challenge of the COPs is to reach an agreement on the reduction of greenhouse gas (GHG) emissions. The negotiators take as their working basis the reports of the IPCC (Intergovernmental Panel on Climate Change) which compile all current scientific knowledge.



Thousands of people attended the Earth Show on May 30, 1992 in Rio de Janeiro before the opening of the Earth Summit which ran from 03 to 14 June, 1992 (Ph. AFP)

These annual meetings are an opportunity for States to take stock of their actions in favor of the climate and to discuss what should be done to avoid irreversible disruption

of the climate system.

Still, the results, from year to year, are disappointing, mixed but sometimes crowned with success, without however preventing GHG

concentrations from increasing. Here is a review of the main high masses that punctuated the global climate negotiations. □

- 1992: The Rio Earth Summit, the genesis

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992 at the Rio Summit.

It entered into force in 1994 and has been ratified by 197 Parties (196 States and the European Union). Its goal: to stabilize concentrations of greenhouse gases "at a level that prevents dangerous anthropogenic (human-induced) disturbance of the climate system". At this Summit, the action program for the 21st century was created (Agenda 21). Two conventions were also initiated, that on biological diversity and that concerning the fight against desertification.



- 1995: Berlin, the 1st COP

It was the German capital that hosted the first Conference of the Parties. It was the COP that had set the format for future COPs. Its mission was to reduce greenhouse gas emissions by setting quantified targets for each country and region of the parties that have ratified the United Nations Framework Convention on Climate Change (UNFCCC).

- 1997: the Kyoto Protocol, the major turning point



COP3, which took place in Japan,

was a major turning point in the fight against global warming. Indeed, for the first time, a legally binding treaty was put in place. Called the Kyoto Protocol, it mainly aimed at regulating CO₂ emissions. The Protocol imposed on 37 developed countries emission reductions of an overall average of -5% compared to 1990 over the 2008-2012 period. The other countries did not commit to quantified objectives but were involved in the process through incentive mechanisms. However, the United States refused to ratify the protocol, considering that it would slow down the country's economy. In the following years, negotiations continued, and the US continued to veto the Protocol.

- 2001: The Marrakesh Accord

At the end of COP 7, the Marrakesh accord



provided for assistance from developed countries to developing countries. Following this agreement, the Kyoto Protocol was opened for ratification by the various States.

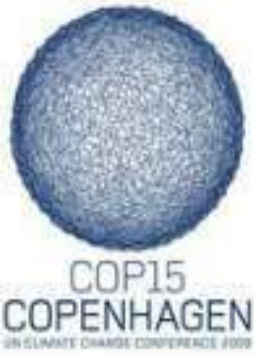
- 2006: The Bali roadmap

Meeting after meeting, the United Nations understood that the Kyoto protocol was largely insufficient, and that they had to find a new battle plan. The negotiations were tense and marked by the persistent stubbornness of the United States to refuse any compromise. But the US ended up accepting the roadmap which aims to sign an emissions agreement before the end of 2009.



construction of global climate diplomacy

- 2009: The failure of Copenhagen



COP15 in Copenhagen, Denmark, had revived great hopes, but its failure was striking. It did not result in any commitment from the various States. The only agreement found, without a timetable or quantified objectives, was the wish to limit global warming to 2 degrees Celsius.

- 2010: Cancun



After twelve days of stormy negotiations, COP16 managed to salvage what remained of the legitimacy of the COPs, after years of procrastination. Rather than imposing contentious joint resolutions, each country was asked to notify what it was prepared to do.

The 2-degree Celsius target remained unchanged. The summit notably marked the creation of a committee for adaptation to climate change, supposed to help the poorest countries.



Opening of the World Climate Conference, February 1979
(Source: World Meteorological Organization)

-2011: Durban prepares the Paris Agreement



A legally binding treaty still failed to be imposed. However, the Durban roadmap forebode the Paris Agreement. The Kyoto Protocol was extended. A "green fund" intended to help developing countries deal with global warming was created. Similarly, a negotiation procedure, baptized the Durban Platform, will have to draw up a legal commitment applying to all the signatory States.

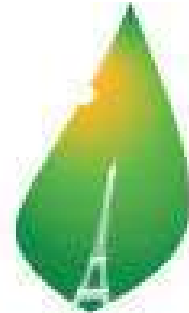
- 2012: Doha and the limits of the Kyoto Protocol

The Protocol was extended at the 2012 Doha conference for a second



commitment period, imposing a target of reducing global greenhouse gas emissions from developed countries by at least 18% from 2013 to 2020 compared to 1990 levels. The final compromise was driven by the European Union, which was the first to communicate in April 2012 its goal of reducing its greenhouse gas emissions by 20% for the second commitment period. Tossed about from all sides, the Protocol ended up showing its limits. Four countries withdrew: Russia, Japan, New Zealand, and Canada. Once again, to replace and succeed the Protocol, it was necessary to find a binding legal instrument applicable to all.

- 2015: The Paris Agreement, the historic turning point



COP21 marked a historic milestone, with the adoption of the Paris Agreement, ratified by 195 countries. This international recognition of the concept of climate change inaugurated for the first time a legally binding international treaty whose goal was to limit global warming to a level below 2 degrees Celsius, preferably 1.5 degrees, compared to the pre-industrial level. The promise of 100 billion US dollars made to poor countries at the Copenhagen COP was also reaffirmed. This ambitious agreement laid the foundations for international climate policy for years to come.

- 2016: The COP for Action was born in Marrakech



The challenge of COP22 was to be part of the continuity of the Paris agreement, with the aim of obtaining commitments from countries on concrete actions, managing funding and ensuring a real conversion of economic models. At the end of the Summit, 111 countries ratified the Paris Agreement underlining its historic importance. Some of them have also started to postpone their long-term decarbonization strategies.

In Marrakesh, the so-called "COP for action" accelerated the progress made under the Paris Agreement in terms of finance, new initiatives, ambition, and solidarity between nations and continents.

At the initiative of the King of Morocco, the first African Action Summit was held, which enabled the continent to act on its firm desire to take care of its destiny, to speak with one voice, and to join forces to fight climate change and strengthen its resilience. Similarly, one of the great advances of Marrakesh is the participation of non-state actors and

Understanding the four main themes of COP27

- Adaptation: Adaptation to climate change involves making adjustments to ecological, social, and economic systems, as well as to processes and practices to adapt to both the actual effects of climate change and potential future damage. In addition, adaptation is also about making the most of all the potential beneficial opportunities associated with climate change.

- Mitigation: Mitigation of climate change refers to all actions or efforts undertaken to reduce the levels of greenhouse gas emissions in the atmosphere in order to prevent further warming of the planet. Mitigation can consist of reducing the sources of these gases, for example by using new technologies and

renewable energies, or of enhancing «sinks» such as forests and soils which store these gases.

- Climate finance: climate finance allows countries to reduce greenhouse gas emissions, for example by financing renewable energies such as wind or solar energy. With this funding, communities can also adapt to the effects of climate change.

- Loss and Damage associated with climate change: extreme events and slow-onset events in developing countries that are particularly vulnerable to the adverse effects of climate change. □

Source: United Nations

From one COP to another, the difficult construction of global climate diplomacy

of the private sector in the dynamics of climate change.

- 2017: The withdrawal of the US and the issue funding undermined COP 23



The international climate conference, which took place from November 06 to November 17, 2017 in

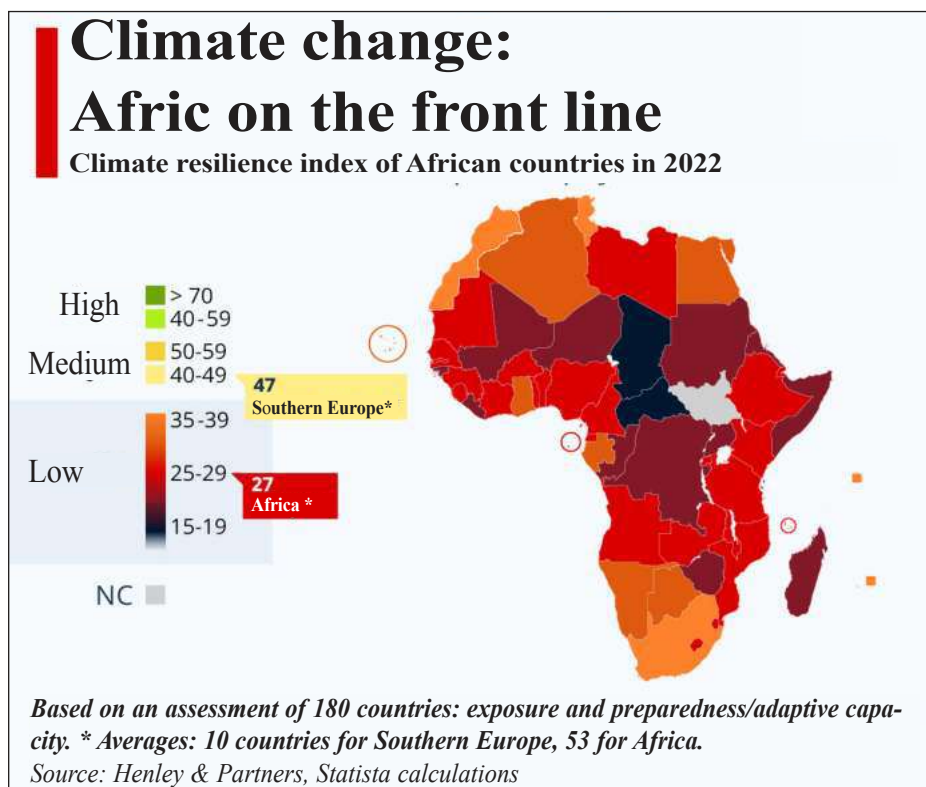
Bonn under the presidency of the Fiji Islands, was the second conference of the Parties since the Paris Agreement. COP23 started in rather special circumstances, after the announcement of the withdrawal of the US from the Paris Agreement, under the mandate of Donald Trump. The discussions did not make much progress, undermined by the question of funding.

- 2019: Very mixed results in Madrid



The annual climate summit (COP25) ended on December 15, 2019 in

Madrid with a result below expectations, far from the climate emergency. This was mainly due to the failure of the negotiations concerning the framework of the carbon market and the very relative success



of the objective set, that of giving a strong political message in terms of ambitions. "I am disappointed with the outcome of COP25", UN Secretary General Antonio Guterres said in a statement. "The international community lost an important opportunity to show increased ambition on mitigation (reducing greenhouse gas emissions), adaptation, & finance to tackle the climate crisis", he said.

- 2021: In Glasgow, Covid, and timid progress

The goal of COP26, delayed for one year because of the pandemic, was to set stricter rules to keep glo-

bal warming below 2 degrees Celsius. Once again, the Summit made only timid progress.

Rich countries failed to deliver the US\$100 billion needed for climate in 2020 to help vulnerable developing countries transition to low-carbon economies and adapt to climate change. However, for the first time in the history of the Conferences of the Parties, the Glasgow decision contained an agreement accepted by all the States relating to the acceleration of the global energy transition by means of the abandonment of coal and the reduction of fossil fuel subsidies.

- 2022: Very complicated context in Sharm el-Sheikh



It is in Egypt, in the seaside resort Sharm el-Sheikh, that the COP27 will take place from November 09 to 18. Against a backdrop of war in Ukraine and soaring energy and food prices, energy security will be at the heart of discussions, and above all of diplomatic tensions. This summit will also be held against a backdrop of disasters and climatic madness: unprecedented droughts, water shortages, forest fires in the world, heat waves, floods, and other issues. To prepare for the formal COP27 negotiations, the Environment and Energy ministers of some 50 countries met in Kinshasa from October 03 to 05, 2022. Several themes were discussed including the mitigation of emissions, climate finance, and the issue of Loss and Damage, i.e. the damage caused by extreme weather events. Great expectations thus remain attached to this very special COP27. Especially since time is running out in the face of the climatic disasters that follow one another. □

Myriam Ezzakhrajy

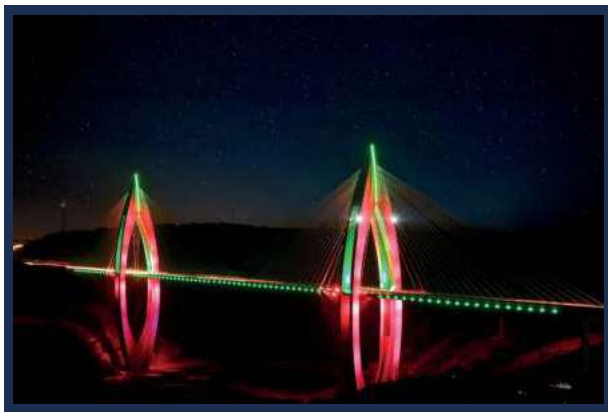
What is a high-level champion for climate action?

THE role of the UN High-Level Champion for Climate Action was established in 2015 at COP21 in Paris to help deliver governments' ambitions to reduce carbon emissions and build resilience to climate change. The champions specifically link the work of governments to the many voluntary and collaborative actions taken by cities, regions, businesses, investors, and civil society. COP26 witnessed the greatest mobilization of real economy actors ever, integrating the agendas of non-state and governmental actors by establishing common short-term goals and the means to achieve the goals of such agendas.



(Ph. AFP)

In February 2022, Dr. Mahmoud Mohieldin was appointed as the 7th UN High Level Champion for Climate Action from Egypt. He will join Nigel Topping, who continues his role as high-level champion for the UK following the UN climate change conference, COP26 in Glasgow. Dr. Mohieldin is an economist with over 30 years of experience in international finance and development. He is Executive Director at the International Monetary Fund and is the United Nations Special Envoy for the financing of the 2030 Agenda for Sustainable Development. □



HIGHWAY OF MOROCCO, A NATIONAL OPERATOR RESOLUTELY COMMITTED TO SUSTAINABLE DEVELOPMENT

THE National Motorway Company of Morocco (ADM) places social and environmental responsibility at the heart of its development strategy. As an eco-responsible company, it submits all its projects to an environmental impact study, and takes into account environmental requirements during the various phases of construction of the motorway infrastructure.

Indeed, the transport sector alone accounts for one quarter of greenhouse gas emissions at the global level, and 23% at the national level. Despite its low responsibility in terms of greenhouse gas emissions, Morocco has developed a Long-Term Morocco 2050 Low Carbon Strategy in October 2021, in which it sets an indicative electricity mix target which is 80% based on renewable energies by 2050.

The International Conference for Sustainable Mobility, for an eco-responsible road sector:

In order to materialize the historic commitments of the Paris Agreement, ADM ensures the mobilization of all stakeholders, and the awareness of motorway users of the climate issues induced by the

transport sector, with a view to contributing to the reduction of the carbon footprint on road networks. This is why, since 2016, ADM has been organizing, on the eve of COP22 hosted by Morocco, the International Conference for Sustainable Mobility. Bringing together all players in the road sector, ADM succeeds in its goal of raising the awareness of all stakeholders, in order to take action and develop eco-compatible road networks.

■ The 1st edition of the International Conference for Sustainable Mobility :

This first edition, under the theme "Sustainable Mobility: Setting up the first milestones" allowed to launch a call to local authorities, transport and logistics operators, to think about the role of mobility and the transport sector in the fight against climate change.

The conclusions of the day of the International Conference on Sustainable Mobility, were presented at the side event on the same topic, held on the sidelines of the COP22 in November 2016 in Marrakech.

■ The 2nd edition of the International Conference for Sustainable Mobility :

The second edition, under the theme "Sustainable Mobility: Meeting the challenges of Africa in sustainable mobility" led to the positioning of ADM as a leader and precursor of sustainable mobility in

Morocco, particularly through the development of new clean energy products and the establishment of electric charging stations on the axis Tangier-Agadir.

Morocco has confirmed its international influence in terms of sustainable development, which has also materialized through the mobilization of the scientific community, donors, international institutions and operators around the issue of sustainable mobility through this conference.

■ The 3rd edition of the International Conference for Sustainable Mobility:

The third edition, around the theme "Sustainable road transport and mobility for a sustainable future" highlighted topics such as green finance and its role in the development of sustainable mobility, the importance of accessibility and mobility for inclusive socio-economic development, or the need to integrate the economic costs of climate consequences into the planning and evaluation of the financial performance of projects.

■ The 4th edition of the International Conference for Sustainable Mobility:

This fourth edition, held on the eve of COP27, around the theme: "Decarbonizing, financing and digitizing the road sector for sustainable mobility and growth" set the course for sustainable growth, and was the keystone for a transition to a sustainable and inclusive green economy.

CONCERNED about the environment, the National Motorway Company of Morocco has developed a range of programs and innovative solutions for its ecosystem, in particular:

The green program for environmental protection and the reduction of the carbon footprint

- "Al Ard " project, which consists of protecting motorway embankments against water erosion and stabilizing the soil using innovative techniques based on biological engineering while creating an income-generating activity for local farmers;

- Dry compaction technique which allows the preservation of water resources in the construction of motorway infrastructures, used for example in the construction of the Sekhour-Marrakech (100 km) and Marrakech-Agadir (250 km) motorway, and which has saved approximately 4 billion liters of water;

- Compensation reforestation, which consists of replanting trees in deforested areas during the construction of the highway, ADM has carried out a replanting program of 3 million trees including the argan tree, an endemic symbol of Morocco, in addition to a reforestation program of 800,000 trees which is in progress;

- The recovery of water reclaimed from the motorway platform and its sanitation works for reuse for watering;

- The establishment of oil separator basins for the treatment of runoff water flowing into the wadis.

The Azur program for the integration of recycling techniques and renewable energies

- The use of innovative techniques that save on aggregates and bitumen during the maintenance of the motorway pavement: this consists in recovering and reusing the materials present in the old pavements for the implementation of the replacement pavements;

- The installation of charging stations for electric vehicles in the service areas of the motorway network;

- The installation of electricity production stations based on solar energy in toll stations.

The community program, for informed future citizens

This program includes all the actions that ADM undertakes with its communities that make up its ecosystem. The support offered under this program particularly affects young people, who represent one of the company's priorities.

The J program, for young people, is available in two versions: "Young Hopefuls" intended for children from primary schools bordering the motorway axis and "Young Leaders" which targets students from Engineering Schools and R&D and Innovation universities within the various research laboratories of the Kingdom. In this context, ADM undertakes educational activities to raise awareness about motorway safety and environmental protection, through dedicated workshops and spaces laid out in an artistic and playful way, in partnership with professionals in the sector.



Traffic fluidity, a solution to limit GHG emissions

Moreover, given that smoothing and safe traffic is an important factor in limiting greenhouse gases, that are responsible for global warming, ADM has developed the automation program. This is an integrated project with an overall budget of one billion Moroccan Dirhams (about 92 million US\$), which involves both the upgrading of the network and IT infrastructure, the modernization of toll stations, the digitization of toll means (Jawaz electronic toll collection), and traffic supervision. ADM has also installed the National Traffic Info Center, a "High-tech" infrastructure to secure, streamline, and control traffic on the entire national motorway network 24/7. All of these concrete actions testify to ADM's desire to systematically adopt the technical solutions that are the most respectful of landscapes, of the natural environment, and of the environment in the broadest sense.



Climate change: The three major

■ On the eve of COP27, the draft of the World Bank report

■ It proposes concrete and priority actions to support the low-carbon and resilient transition

THE eyes of many officials are riveted on COP 27, which is being held this time in Sharm El-Sheikh, Egypt. An opportunity for the World Bank to release its latest report on climate and development in Morocco. This work is part of the new series of major diagnostic baseline reports that integrate climate change and development considerations. These documents are intended to help countries prioritize the most effective actions to reduce their greenhouse gas emissions and boost their adaptation, while achieving broader development goals.

Everyone will have noticed the latest global trend: donors have started to integrate climate issues into the development and financing policy. The goal is to be pioneers in the greening of the international financial system. In this series of reports, Morocco occupies a prominent place. It is treated as a pilot country, out of around thirty countries worldwide, underlines a senior official familiar with the matter. An issue that Rabat will not fail to avail itself of, to better position itself at the global level, on the issues of global warming and environmental protection. Already, Morocco had hosted the COP22 in Marrakech and received the greatest personalities of this world in terms of climate.

Moreover, during his last visit last September, the Vice-President of the World Bank in charge of the MENA region presented the Moroccan government with a draft of the document. Morocco submitted its observations and recommendations, and it is this report that will be distributed at COP27. This report identifies key pathways to reduce greenhouse gas emissions and climate vulnerabilities, including the costs and challenges as well as the benefits and opportunities of doing so. The report proposes concrete and priority actions to support the low-carbon and resilient transition.



Despite massive investments, the gap between water supply and demand experiences structural deficits in several perimeters. In a longer term perspective, reduced water availability and lower agricultural yields could reduce GDP by 6.5% (Ph. AFP)

■ Three priority areas:

The draft has identified three priority areas which are major challenges for Morocco. These are the fight against water scarcity and the improvement of resilience to floods. The third axis aims to decarbonise the economy, by considering a trajectory aiming for carbon neutrality by 2050.

Concerning the first axis, Morocco is on the list of countries in the world that are the most affected by

water stress. Its approach consisted of responding to the challenge of lack of water and drought by building major infrastructures such as dams. The idea is to increase its total storage capacity and meet drinking water and irrigation needs. Today, this approach has shown its limits in the face of climate change. Despite these massive investments, the gap between water supply and demand registers structural deficits in several perimeters. The decline in rainfall has compromised

the effectiveness of the infrastructure-based approach. In a longer-term perspective, reduced water availability and lower agricultural yields could reduce GDP by up to 6.5%. Rain-fed agriculture is particularly vulnerable to droughts. It still accounts for 80% of the country's cultivated area and employs the majority of agricultural workers. Climate-induced changes to this agriculture could lead to the rural exodus of 1.9 million people, or 5.4% of the total population by 2050.

The high cost of floods estimated at more than 4 billion MAD

THE other focus of the report relates to floods, which represent the most frequent climate-related natural disaster in Morocco. Due to its geographical location, the great variability of rainfall and its topography, Morocco is particularly prone to flooding. Nearly 20 floods were thus recorded between 2000 and 2021, causing average direct losses estimated at 450 million dollars per year, or more than 4 billion Dirhams.

In this area, Morocco has reoriented its strategy, moving from a post-disaster emergency approach to that of prevention, by investing in risk reduction. After the National Flood Protection Plan of 25 billion DH, it moved to the Fund for the



Fight against the Effects of Natural Disasters. This is an innovative mechanism for co-financing investments aimed at disaster risk reduction. It has also set up an insurance scheme

against catastrophic risks, based on the coverage of insured households through additional premiums received and managed by private insurers. □

challenges facing Morocco



The decarbonization program focuses on the development of renewable energy sources. Thus, several flagship solar and wind energy projects have been implemented to tap the country's significant renewable energy potential

■ The role of local governments in the climate field

The document formulates a series of principles to be used in particular to meet ambitions in terms of climate adaptation and mitigation. The first principle seeks to take a whole-of-go-

vernment approach. Indeed, the climate challenge cannot be addressed solely from a sectoral perspective or within current institutional boundaries. It is a question of strengthening coordination mechanisms both horizontally and vertically, knowing that

local governments will have to play an important role in climate matters. The Bank advocates public finance management tools, such as climate-responsive budgeting, green public procurements, and environmental taxation. These tools can enable the

systematic integration of the climate dimension into all public actions.

■ Morocco has the reputation of a new climate champion

The idea put forward in the 3rd axis consists of decarbonizing the economy to achieve carbon neutrality by 2050. As the energy sector is the main contributor to Moroccan emissions, the decarbonization program is focused on the development of sources of renewable energy. Thus, several flagship solar and wind energy projects have been implemented to exploit the country's significant renewable energy potential. And this, by increasing the share of renewable energies to around 20% of the energy sources used by the production of electricity in 2021. However, the efforts made by Morocco to decarbonize its economy thanks to renewable energies have been counterbalanced by the increasing use of coal in the production of electricity. Thus, wind, solar, and hydroelectricity accounted for only 20% of the country's electricity production and 3.9% of its total energy consumption in 2019. Oil takes a 56.5% share in the energy mix, coal 29.8%, biofuels 5.9%, and natural gas 3.9%. □

Mohamed CHAUI

Protect the most vulnerable populations

THE project of the generalization of social protection offers the possibility of integrating adapted elements of response which would make it possible to react quickly to protect the populations affected by climatic events and compensate for their loss of income or assets. In addition, Morocco could expand its flood disaster risk financing mechanism to cover drought risks, the institution notes. It believes that some climate policies could harm vulnerable households and businesses, which lack the capacity to adapt quickly. Similarly, compensatory measures should be developed to avoid exacerbating social disparities and contribute to a fair and inclusive transition. If the resilient and low-carbon transition offers prospects for green jobs, it will be necessary to prepare workers for these opportunities, it is indicated.



For this, it will be necessary to put in place incentives in the education and vocational training system in order to refocus programs according to the evolution of need in terms of skills. Public policies should also prepare for rural exodus flows due to climate change. □

The nagging question of 100 billion dollars for the Global South

■ Developed countries had promised them at the Copenhagen COP in 2019

■ They will manage to get there in 2023

■ These funds are still insufficient for climate

100 billion US dollars per year is the commitment made in 2009 by developed countries at the COP in Copenhagen, to mobilize funds of this amount from 2020 in order to finance actions to combat climate change in countries in development.

The 100 billion USDs that were mentioned then came from an estimate of the United Nations Framework Convention on Climate Change (UNFCCC) by 2030. The European Commission had for its part estimated the needs at 100 billion euros, a figure considered too high to discuss in Copenhagen. The European Commission also put forward the idea of rapid financing of the order of 5 to 7 billion euros per year before gradually reaching 100 billion dollars in 2020.

The goal was missed, even before the Covid-19 worsened the situation. However, the OECD claims that the goal will be reached in 2023, three years behind schedule, and that it will even be exceeded in 2024 with 113 billion dollars and in 2025 with 117 billion dollars. The projections are rising, but these amounts pale in comparison to the colossal sums mobilized to fight Covid-19 between 2020 and 2021, then for the rise in energy prices in 2022.

These 100 billion dollars have nevertheless become an explosive subject, which emerges at each COP, and which will not fail to be at the forefront of COP 27 in Egypt, a country determined to remind developed countries their historic commitments and responsibilities.

The fact is that behind this commitment of 100 billion dollars lies a debate on the responsibility for climate change. Given the development gaps, the countries of the

Future ranges of climate finance provided and mobilized by developed countries Based on two forward-looking scenarios, in billion USDs						
	Component	2021	2022	2023	2024	2025
Scenario 1	Public funding	70.5	77.7	85.3	91.1	94.5
	Export credits	2.6	2.6	2.6	2.6	2.6
	Private financing mobilized	15.2	16.7	18.4	19.6	20.4
	Total	88	97	106	113	117
Scenario 2	Public funding	66.5	74.6	82.5	89.3	94.0
	Export credits	2.6	2.6	2.6	2.6	2.6
	Private financing mobilized	14.0	15.0	16.0	16.5	16.6
	Total	83	92	101	108	113

Note: The sum of the components may not correspond exactly to the totals due to rounding. Future levels of climate finance are inherently uncertain. The scenarios presented here aim to reflect and illustrate this uncertainty. However, these scenarios may not cover the full range of possible outcomes in any given year.
Source: OECD analysis of intentions, promises, or stated objectives of developed countries and multilateral development banks subject to assumptions, in particular to avoid double counting

Global South accuse the developed countries of being responsible for the current situation, through the accumulation since the Industrial Revolution of the early 19th century of significant quantities of greenhouse gases.

The situation has evolved considerably with the emergence of China, the world's largest emitter of CO₂ since 2010, India, Brazil, and other emerging nations. These countries do nonetheless refer to the historical responsibility of the developed countries and their level of development, considering that their emissions per capita are still much lower than those of the West. The emerging nations recall on a regular basis that developed countries must resolutely take the lead in terms of reducing missions,

meaning take the lead in terms of financing.

While the contribution to these 100 billion dollars is still debated, the poorest countries of the group of 47 nations known as the least developed nations, demanded at COP26 in Glasgow the creation of a fund for Losses and Damages due to climate change, functioning as an insurance, which would be fed by the rich countries responsible for this imbalance.

Neither the West nor China responded to this request. The debate still focuses on the 100 billion US dollars whose practical questions have still not been resolved. Where should these funds be placed? How to manage them?

The Paris agreement provided for those 100 billion dollars, a ba-

lance between mitigation projects which make it possible to reduce greenhouse gas emissions, and adaptation projects which help populations to adapt to the effects of climate change. In 2019, only a quarter of climate funds were mobilized to help countries adapt to the climate crisis, while two-thirds went to states to reduce their greenhouse gas emissions.

This breakdown is based on estimates from OECD, which aggregates all the funding it identifies as being intended for climate action, because the idea of a receptacle hosting the 100 billion dollars promised in Copenhagen has fizzled out. The United Nations did indeed launch a green fund in Copenhagen, officially created two years later at the COP in Durban. This Green Climate Fund attached to the UNFCCC must transfer funds from the most advanced countries to the most vulnerable countries.

Nonetheless, the holdings of GCF never exceeded \$7.2 billion, and the United States' departure from the Paris Agreement under Donald Trump came to a screeching halt. The October 2019 Biarritz conference organized on the sidelines of the G7 by Emmanuel Macron was not enough to reactivate the Fund and have it meet the challenges. Funding for climate action still relies on bilateral or multilateral assistance, or on the private financial sector. □

Ismail EL WADI

The Green Climate Fund is growing very slowly

TO fight climate change, the United Nations Green Climate Fund, backed by the UNFCCC, is far from the mark. Officially created at COP17 in Durban in 2011, it was supposed to meet the goal of financing the adaptation and mitigation of the effects of climate change in the least developed countries to the tune of 100 billion US dollars per year by 2020, commitment made in 2010 in Cancun within the framework of the UNFCCC.

This multilateral vehicle is struggling to set itself up and to collect

the necessary funds from developed countries to supply it. A phenomenon aggravated by the withdrawal of the US from the Paris Agreement under Donald Trump.

The financing of the climate transition by multilateral organizations is still far behind the amounts provided by bilateral or private circuits. These amounts accounted for only 3% of total climate finance. It is by using other channels that developed countries should reach 100 billion dollars between 2023 and 2025. □

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Energy mix

The battle is not won yet

■ The goal is to exceed 52% renewable energy by 2030

■ Coal-fired power plants continue to provide the bulk of production

■ A strategy that would protect against external shocks

THIS is one of the bets launched by Morocco in recent years: improving the share of renewable energies in the energy mix is an ambitious goal, based on a strategy that extends until 2030. Hence the importance, according to the line ministry, of continuing efforts to reduce energy dependence which moved from 94% in 2017 to 90% in 2020. In 2019, the structure of sales of energy products in Morocco was marked by a large share of diesel, which represents 54%, Fuel oil (10.1%), propane (1.4%), butane gas (21.7%), gasoline (6.1%) and jet fuel (6.7%). As for electricity production, it is mainly provided from thermal, solar, wind and hydraulic resources.

According to the latest statistics provided by the National Office for Electricity and Drinking Water (ONEE), the share of renewable energies in meeting the demand for electrical energy continues to increase, which, according to ONEE, would make it possible to achieve the goals set in terms of the energy mix. Solar represents 4.5% of total production in 2021, thus recording an increase of 20% compared to 2020. Regarding its contribution to electricity production, it reaches 12.4% in 2021, an increase of 11% compared to 2020, according to ONEE data. Another highlight is the share of wind power production which now exceeds the share of natural gas production (8.5%), and thus becomes the second most important source of production in the country, notes the Office. According to the Minister for Energy Transition, during a recent speech in Parliament, «the supply of the butane gas market, linked in particular to domestic and agricultural uses, has not been impacted by the shutdown of the Maghreb-Europe gas pipeline. These needs are regu-



The evolution of the electricity mix in Morocco would allow the country to offer clean energy, at competitive costs, in order to attract investors concerned about the carbon footprint of their activities, especially since the EU, for example, will soon have to operationalize its new obligations in terms of energy sobriety (Photo by AFP)

larly covered thanks to imports via the various ports of the Kingdom". As for additional electricity needs, Morocco intends to meet them by relying mainly on renewable energies, in addition to a natural gas thermal power plant, during the 1st phase from 2021 to 2025. The second phase, from 2026 to 2030, will be marked by the adoption of a Green Plan, based 100% on renewable resources, the goal being to achieve an additional capacity of 5,200 Megawatts.

• **Coal:** Currently, electricity production remains largely provided by coal-fired power stations, which are used to guarantee the security of the electricity system. These plants, which contribute 68.5% of Morocco's national production, make it possible to cope with the variability of hydroelectric production and the decline in natural gas-based production, pending the commissioning of projects. In renewable energy planned or in

progress, according to ONEE officials.

In this configuration, the achievement of the objectives of the national energy strategy has been delayed. The 42% share of renewable energies in the energy mix was initially planned for 2020, before being postponed to 2023. The idea is that the 52% rate will be exceeded by 2030.

• Implementation delays:

They are attributed to the delay in the development and completion of several projects. The report on state-owned entities mentions in particular the integrated wind energy program of 1,000 MW made up of six parks, distributed in the Southern and Northern regions: Taza (150 MW), Tangiers II (70 MW), Boujdour (300 MW), Tiskrad (100 MW), Midelt (180 MW), and Jbel Lahdid (200 MW). Overall, the total renewable energy capacity would be 4,026 MW at the end of 2020. The share of these energies in the overall installed power would not exceed 37.5%. Officials remain optimistic. They say that the extension of the deadlines for the completion of the sites should not have an impact on the offer. This is explained, according to the Ministry of Finance, by "the deceleration in the pace of change in demand, an average of 3% over the last 6 years versus 6% recorded between 2000 and 2014". Added to this is the commissioning of an additional capacity of 2,840 MW in fossil energy between 2015 and 2019. □

Mohamed ALI M'RABI

Shocks

BY increasing the share of renewable energies in installed electrical power to 52% in 2030, Morocco could make gains in terms of fossil fuel imports of nearly 4.2 million tons of oil equivalent. This would represent a saving of 8.5 billion Dirhams (about 780 million USDs), or 11.2% of energy imports, not counting the positive impact on the current account and foreign currency assets.

«The gain achieved would be nearly 0.7 points of GDP and would have a positive impact of 0.4 of the net foreign assets of Bank-Al-Maghri», according to estimates by the central bank (BAM). These estimates depend on the evolution of the import prices of thermal production inputs, coal, fuel oil, diesel and natural gas as well as on the exchange rate of the dirham (MAD) versus the US dollar. Pressures on petroleum product prices due to the post-Covid recovery and to the war in Ukraine have highlighted the importance of this strategy. Beyond reducing the country's exposure to external shocks, this would allow Morocco to position itself within the framework of the reconfiguration of global value chains. Offering clean energy, at competitive costs, would be a real argument for attracting investors concerned about the carbon footprint of their activities. Especially since the EU will soon have to operationalize its new obligations in terms of energy sobriety. In addition to solar and wind, Morocco also seems to be betting on green hydrogen, which offers more advantages in terms of storage and transport. □

Biomass

THE Ministry of Energy has announced the development of a roadmap for the energy recovery of biomass, aimed at its sustainable use, as a renewable and climate-friendly source.

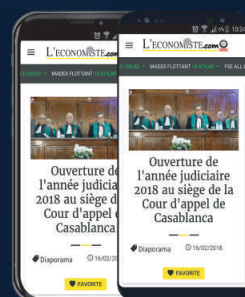
The line ministry bets on a positive social, environmental, and economic impact, both at the national and local level, throughout the value chain, from collection to the finalization of biomass as a resource. □

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Pioneer in Africa, Morocco continues

■ The energy transition, a national choice driven by the Sovereign

■ This sector produced 12.4% of the electricity mix at the end of 2021

■ 14.5 billion MAD for an integrated program by 2024

THE energy transition is a strategic choice for Morocco. Driven by a royal vision, wind energy requires the necessary technology on the one hand and natural potential on the other, and the Kingdom is full of areas with high potential on shore and offshore, which means that it has all the necessary assets to succeed in its strategy in this area. Its wind and solar farms, which generated more than 16.9% of electricity in 2021, testify to this potential. As a pioneering country with significant potential, the Kingdom is involved in projects aimed at developing this sector worth 40 billion US dollars by 2030, including 30 billion devoted to renewable energies. Solely for wind power, Morocco, a privileged partner of the European Union (EU), will invest 14.5 billion MAD (about 1.33 billion USD) in an integrated wind power program, which will be commissioned by 2024. Announced at the on the eve of COP27, by the Minister of Foreign Affairs, Nasser Bourita, this renewable energy investment program aims to strengthen Morocco's energy mix. To achieve this,



Morocco not only has the largest wind farm in Africa, located in Tarfaya, but also a huge offshore wind energy capacity in the Strait of Gibraltar and in the Southern part of the Atlantic coast, an area where the average wind speed is greater than 10 km per second



The wind turbines of the Kingdom have made it possible, according to the Ministry of Energy Transition, to reach an installed power of 1,220 megawatts (MW) in 2018, or 11% of the electrical capacity.

wind farms will be installed almost everywhere, confirming the desire to make renewable energies a major source of energy in the coming years.

● Towards «zero carbon emission» energy

The wind turbines of the Kingdom have made it possible, according to the Ministry of Ener-

gy Transition, to reach an installed power of 1,220 megawatts (MW) in 2018, or 11% of the electrical capacity. All renewable energies (wind, hydroelectric, and solar) constitute 34% of the total electrical capacity (3,700 MW). In concrete terms, the wind farms installed, particularly near Tarfaya, Tangier, and Boujdour, have provided the Kingdom with installed capacities of 300 MW, 50.6 KW and 200 MW respectively, which should considerably reduce CO2 emissions by gradually moving towards a carbon-free energy. The 850 MW Integrated Wind Power Program, made up of the «Midelt-210 MW», «Boujdour-300 MW», «Jbel Lahdid-270 MW», and «Tiskrad in Tarfaya-100 MW» wind farms, is an important component of the national energy strategy. This transformational project, whose

The Green Partnership with the EU

MOROCCO and the European Union (EU) signed, on Tuesday, October 18, 2022, a memorandum of understanding on the establishment of a Green Partnership. This agreement is likely to promote dialogue and early political exchanges, taking into account the interests, priorities, and concerns of each partner in the development of policies on climate change, energy transition, environmental protection and the green and blue economy at the bilateral, regional, and multilateral levels. The Kingdom thus becomes the first country to enter into



a partnership of this type with Brussels. Its «Green Partnership» should, among other things, place the fight against climate change, the promotion and advancement of the energy transition, environmental protection, and the transition to a green and equitable economy, among the priorities of relations between the EU and Morocco.

Finally, it is a question of promoting the transition towards a carbon-free industry by investing in green technologies, the production of renewable energy, sustainable mobility, and clean production in industry. □

to develop its wind power

forecast electricity production will save approximately 2,380,000 tons of CO₂/year, has strongly contributed to the emergence of a Moroccan wind industry.

● Among the Top 4 of the Africa and Middle East region

According to the latest report from the international research and think tank Ember, "wind and solar generated more than one tenth (10.3%) of the world's electricity in 2021, compared to 9.3% in 2020, twice as much as in 2015 when

the Paris Climate Agreement was signed (4.6%)". "Clean electricity sources combined generated 38% of global electricity in 2021, more than coal (36%)", adds the same source. Indeed, Morocco is on the list of fifty countries that have now passed the milestone of 10% wind and solar power in the national electricity mix. The Kingdom (13.43%) is in the Top 4 of the Africa and Middle East region, behind Kenya (17.51%), Jordan (15.73%), and Yemen (15%). It should be noted that for Morocco, the report

is based on 2020 data, without taking into account projects commissioned in 2021. As a reminder, last year, Morocco recorded an additional capacity of 80 megawatts (MW) in solar energy (from the Noor Tafilalet Project) and 36 MW in wind power (Oualidia Park). Thus, the total cumulative renewable energy capacity (including hydraulic energy) will have exceeded, for the first time, the 4,000 MW mark to reach 4,050 MW at the end of 2021, i.e. 37.6% of the electricity mix, with a share of 4.5% for solar produc-

tion (+20% compared to 2020) and 12.4% for wind power (+11%).

● Increase wind power generation capacity

Morocco's wind power generation capacity is expected to reach 4.2 GW by 2030. This would help meet overall renewable energy targets (i.e. 52% by the end of the decade), and above all would make it possible to cover 17.3 times the country's needs, without counting the production of wind energy which could be installed at sea. It should be noted in this sense that the Global Wind Energy Council (GWEC) has pointed out that "the Kingdom has offers of high power floating offshore wind turbines which can be of great help in reducing dependence on fossil fuels - oil, gas, coal - and achieving the «Net Zero» objective by 2050". On the other hand, Morocco not only has the largest wind farm in Africa, located in Tarfaya, but also a huge offshore wind power generation capacity in the Strait of Gibraltar and the southern part of the Atlantic coast, an area where the average wind speed is greater than 10 km per second. For the GWEC, "thanks to its wind potential, Morocco is part of a hunting pack of markets likely to drive the new wave of growth in floating wind energy".

Youness SAAD ALAMI

● The energy transition, a strategic choice

WIND and solar generated more than 16.9% of Morocco's electricity in 2021. Being one of the fifty countries whose share of solar and wind in the electricity mix exceeds 10% in 2021, the Kingdom has made the energy transition a strategic choice. This situation was reached thanks to the legal context of the country and thanks to the natural resources available to the Kingdom. It should be remembered that under the Royal impetus, the national energy strategy has defined, from the beginning of the 2000s, the rise in power of renewable energies, and the strengthening of energy efficiency and regional integration, as priorities. Broken down into roadmaps with short, medium, and long-term goals, including the acceleration of the energy transition by increasing the share of renewable energies to 52% by 2030, the National Climate Plan 2030 aims to reach 52 % of installed electrical power from renewable sources. To achieve its goals, Morocco has relied mainly on wind energy. Thus, wind farms have been set up in different regions of the Kingdom, in particular on the western peaks of the Rif mountains near the Strait of Gibraltar, near Essaouira, near Safi and Oualidia, near the cities of Laâyoune and Tarfaya, and on the peaks of the Atlas Mountains, not far from the cities of Midelt and Taza. As a result, Morocco now ranks sixteenth in the world, with a share of more than 12% in the national electricity mix. The country ranks second in Africa and the Middle East, behind Kenya (16%), Denmark (48%), Uruguay (43%) and Ireland (33%) respectively constitute the world's top 3 in this category.



Taza and Midelt wind farms

MOROCCO has 28 wind farms. These include the Midelt and Taza facilities. The first, with a capacity of 210 MW, is part of the Moroccan Wind Energy Program of 2000 MW. For its part, the Taza wind farm project (150 MW) was launched by the Moroccan Electricity and Drinking Water Office (ONEE) and its partners in the project (the Energy Investment Company and the Hassan II Fund for Economic and Social Development) on October 25, 2010. This project is developed as an IPP (Independent Power Procurement).

The energy characteristics of the Midelt wind farm project

- ▶ Installed power: 210 MW
- ▶ Annual potential production: 560 GWh/annum
- ▶ Location: Midelt
- ▶ CO₂ avoided: 280,000 Tco₂/year
- ▶ Type of partnership possible: Joint-Venture (SPV held in equal shares): The project company will be responsible for the financing, design, construction, commissioning, operation and maintenance of the wind farm as well as the sale of the electricity produced to ONEE within the framework of a PPA.

- ▶ Cost of the project: 2.470 million dirhams.

- ▶ Commissioning date: 2020

The energy characteristics of the Taza park project

- ▶ Installed power: 150 MW
- ▶ Produçible: 540 GWh
- ▶ Location: 12 km from Taza
- ▶ CO₂ avoided: 300,000 TCO₂/year
- ▶ Job creation: 406 direct jobs (380 in the construction phase and 26 in the operation phase)

▶ Project progress

Provisional authorization for the construction of the park has been granted to EDF-Energies Nouvelles Maroc (EDF-EN);

Finalization of land acquisition

The project is under development.

The project will be carried out in two phases; Phase 1: 87 MW and Phase 2: 63 MW

Project cost: 2,565 million dirhams.

Planned commissioning date

Phase 1: 2022; phase 2: beyond 2025

(Source: Ministry of Energy Transition and Sustainable Development)



The decarbonization of the Moroccan economy in progress

■ Companies, administrations, local authorities: everyone must get involved

■ The E.U. is setting up a carbon adjustment mechanism at its borders

■ The countdown has started for January 01, 2023

It is no longer possible to procrastinate: the Moroccan economy must begin its decarbonization, first of all, because the achievements of each country in relation to its commitments are scrutinized and verified. Then, because from January 01, 2023 onwards, new barriers will be erected at the borders of the European Union, Morocco's main trading partner. The European Carbon Border Adjustment Mechanism (CBAM) will make it possible to apply additional costs according to the carbon emissions of companies located in third countries.

Since the Paris agreement in 2015, where countries have legally committed themselves to the climate, the parties have been working to materialize the commitments they have made. In Glasgow, as in Cairo, the negotiations focus on the methods of calculating greenhouse gas reductions, in order to follow them.

It is therefore time for Morocco to adopt a method to advance its decarbonization. In this regard, a system has crystallized around the Mohammed VI Foundation for Environmental Protection. Since 2013, the Foundation has been working on tools that make it possible to measure the greenhouse gases of an organization or a territory. Its Carbon Tool, set up in 2013 with the Ademe energy agency, is based on a database of 350 emission factors calculated according to the Moroccan context. In 2016, the Foundation signed a Qualit'air covenant with the General Confederation of Moroccan Companies (CGEM) to encourage companies to use this tool and reduce their greenhouse gas emissions, but, in the absence of constraints, few



In 2021, in view of COP 26 in Glasgow and the decisions that were going to be made, a real mobilization began. A «task force», as it called itself, was created on July 27, 2021 for the decarbonization of the Moroccan economy

companies have subscribed to this approach.

In 2021, in view of COP 26 in Glasgow and of the decisions that were going to be made, a real mobilization began. A "task force", as it called itself, was created on July 27, 2021 for the decarbonization of the

Moroccan economy. It brings together in a framework agreement the Ministry of Industry and Trade, the Ministry of Energy Transition and Sustainable Development, the National Agency for Energy Efficiency (AMEE), the Moroccan Institute for Standardization (IMANOR), the

General Confederation of Moroccan Enterprises (CGEM), and the Mohammed VI Foundation for Environmental Protection.

Its goal is to support companies in their decarbonization. The process is simple. First, identify greenhouse gas emissions; then focus on reducing them. The approach requires a tool and a methodology.

The Carbon Tool created in 2013 by the Mohammed VI Foundation for the Environment protection, as well as the database of 350 emission factors on which it is based, are being updated. They will become the benchmark tool for measuring an organization's emissions, with national and international recognition.

The task force works to explain the approach to companies, local authorities, and organizations, and to train them in its use. These trainings were organized by the Hassan II International Environmental Training center. A sign of awareness is the fact that these training sessions were sold out. Businesses are worried and getting ready so as not to be penalized by the new provisions of the European Union. □

Ismail EL WADI

What is the European carbon tax?

THE European Union has an ambitious green pact to achieve climate neutrality by 2050. This means that all emissions from the EU must be absorbed by natural carbon sinks such as the oceans and forests.

This very high ambition necessarily leads to the implementation in Europe of very restrictive regulations on greenhouse gas emissions. To prevent multinational companies established on the Old Continent from being tempted to relocate their activities elsewhere, to less constrained areas, the European Union has set up a Carbon Border Adjustment Mechanism (CBAM). Its goal is therefore essentially internal: it aims to limit

the leakage of carbon emissions through imports and intense trade, which is constantly increasing, and which represent 20% of European greenhouse gas emissions.

The carbon border adjustment mechanism will apply additional costs depending on the carbon emissions of companies located in third countries. These additional costs are calculated on the costs of the carbon emissions trading system, which currently only concerns companies established in Europe.

The Carbon Border Adjustment Mechanism (CBAM) must be implemented from January 1, 2023. Initially, it will concern the iron, steel, aluminum, cement, fertilizers, and electricity. □

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Morocco begins the shift

■ A real vector of growth to diversify the energy mix

■ The challenge: to become a key supplier for Europe

■ Germany supports the country for the construction of the 1st factory on the African continent

THE ambitious green hydrogen program is making great strides. Various projects have thus been launched and Germany has just announced the granting of 38 million euros to Morocco for the construction of the first green hydrogen plant on the African continent. This decision was made on the sidelines of the visit to Germany on October 18 and 19 of a large Moroccan delegation. Pre-



Currently, Germany is supporting Morocco in the construction of a reference industrial facility for the production of green hydrogen. Preparations for the project have started in collaboration with the Moroccan Sustainable Energy Agency, Masen (Photo by DR)

parations for the project have started in collaboration with the Moroccan Sustainable Energy Agency, Masen. For Morocco, green hydrogen represents a real vector of growth and energy transition. For a

Big projects starting

• **A green ammonia plant in Jorf Lasfar:** The Mohammed VI Polytechnic University (UM6P) and the Dutch company Proton Ventures BV signed an agreement last July for the construction of the Green Ammonia Pilot at the OCP Group's chemical complex in Jorf Lasfar.

As part of the contract signed between UM6P, the OCP Group and the Institute for Research in Solar Energies and Renewable Energies (IRESEN) in November 2021, this agreement concerns the turnkey construction of the first pilot of the "Green H2A". This is a unit for the production of green ammonia with a capacity of four tons per day based on the Haber-Bosch process. Installed in Jorf Lasfar, this world reference unit by its size and its innovative configuration will make it possible to prepare larger industrial projects, by capitalizing on the knowledge and know-how generated during the exploitation phase which will start in the first quarter of 2024.

The Dutch industrial engineering company Proton Venture, which has been chosen as the successful



bidder for the ammonia production pilot project in Jorf Lasfar, has just obtained a loan from the Dutch investment fund "Invest international" with a view to implementing the project launched jointly by the Mohammed VI Polytechnic University (UM6P) and the Institute for Research in Solar Energy and New Energies (IRESEN).

• **"HEVO Ammonia Maroc":** In July 2021, the Portuguese tech-

nology company Fusion Fuel Green and the Consolidated Contractors company (CCC), a global supplier of engineering solutions, signed an agreement relating to the value chain (infrastructure, security, transport, logistics) in connection with the development of the "HEVO Ammonia Morocco" project, which consists of the production of ammonia and green hydrogen. This project, which is part of the Kingdom's goals in terms of renewable energy, should achieve a

production of 31,850 tons per year of green hydrogen, 151,800 T/year of nitrogen, and 183,650 T/year of green ammonia. According to the data presented by the head of Fusion Fuel Green, this project will mobilize an overall investment of 865 million euros. It will make it possible to produce 3,650 tons of green ammonia in 2022, 20,000 tons in 2023, 40,000 tons in 2024, and 60,000 tons in 2025 and 2026. Regarding hydrogen, 616 tons will be produced in 2022, 3,472 in 2023, 6,940 in 2024, and 10,411 in 2025 and 2026, the official said.

• **Total Eren, a subsidiary of Total Energies,** has committed 10.69 billion US dollars, or 100 billion dirhams, to a green hydrogen and ammonia production project in Guelmim-Oued Noun. This project will enable the country to decarbonize certain major sectors of its economy, including mining and maritime transport, and to create a Moroccan industrial sector of green energy which will generate thousands of jobs, direct or indirect, non-relocatable and competitive, in addition to serving Europe with clean energy. □

to green hydrogen at full speed

country whose economy is heavily penalized by the cost of importing fossil fuels, it is called upon to make significant efforts to ensure an energy transition driven by renewable energies. The challenge is to build an industry backed by green molecules (Power-to-X or PtX), particularly hydrogen and alternatively ammonia and methanol.

The global hydrogen market represented 136 billion US dollars in 2019. It should rise to more than 200 billion dollars in 2030. A vast market in which Morocco wants to position itself against competitors who are beginning to join the competition.

According to experts, joining this nascent industry not only helps to diversify the energy mix, but also constitutes a substantial vector, driving reindustrialization and decarbonization of territories. An initiative encouraged by the recoverable potential, available to the country, in terms of renewable energies.

In the medium and long term, Morocco, recognized among the 5 most promising exporting countries worldwide, could develop the large-scale production of green hydrogen and its derivatives. The latter could be used on the national territory for the production of green manures, the transport industry, and the production of electricity, and to replace natural gas. As the fifth-largest fertilizer exporter, Morocco has already taken decisive steps to reduce the footprint of its phosphate industry, which consumes a lot of energy and water. During the second edition of the "World Power-to-X Summit", which was held in Marrakech last June, Chakib Alj, President of the Moroccan employers' union (CGEM), recalled that the Kingdom could capture up to 4% of the world market. hydrogen, or almost 3 billion dollars. "This sector will also offer our country, by 2030 and beyond, tremendous potential for creating value and jobs", he added. This opinion was shared by the Dutch Minister of Economic Affairs and Climate Action, Rob Jetten,

during this same summit and for whom Morocco can "become a key supplier of green hydrogen" for Europe.

Redrawing the geopolitical balances of the region

Thus, in the near future, the country can play a fundamental role in supplying Europe with green energy via electricity or hydrogen, thus redrawing the geopolitical balances of our region, recalled the Economic, Social, and Environmental Council (CESE) in an opinion. The new European commitments to carbon neutrality

in 2050, formalized in the Green New Deal, do open this opportunity. In August 2021, the Ministry of Energy published the roadmap which outlines Morocco's ambitions for green hydrogen. A cumulative investment of around 90 billion dirhams (8.2 billion USDs) by 2030 and 760 million dirhams (70 million USDs) by 2050 is thus planned. To implement the national strategy, three strategic pillars have been identified: technologies encompassing technological developments and cost savings, investments and supply through the establishment of an industrial cluster, and the development of a

master plan of the corresponding infrastructures.

The third pillar, that of markets and demand, refers to the realization of opportunities linked to demand, giving rise to new markets, indicates the ministry, recalling that these strategic pillars are translated into an action plan for 2050 to be implemented gradually and relating to the reduction of costs throughout the value chain of the green hydrogen sector and its derivatives. To support this roadmap, Morocco is already investing in the field by attracting major investors. □

Matar BENSALMIA

The first green hydrogen production system installed



The Green Energy Park is a solar energy test, research, and training platform located in the green city of Benguerir. It was developed by the Institute for Research in Solar Energy and New Energies (IRESEN) with the support of the Ministry of Energy, Mining, Water and the Environment as well as the OCP Group. Unique model of its kind, it is the first platform in Africa (Photo by DR)

THE Institute for Research in Solar Energy and New Energies (IRESEN) announced last September that it had completed the installation of its first green hydrogen production system on a micro-pilot scale, as part of its "Power-to-X μ Pilot" project. It is an electrolyzer with a capacity of 20 kilowatts (kW) coupled to photovoltaic (PV) solar panels and which will be tested under variable load of renewable electricity, explains IRESEN.

The "Power-to-X μ Pilot" project is incubated at the heart of Benguerir's Green Energy Park in col-

laboration with the Mohammed VI Polytechnic University (UM6P). In the next phases, the project will have additional technological bricks, from the value chain of the green hydrogen sector and its applications, commonly called the "Power-To-X" sector, underlines IRESEN. The Institute adds that it is mainly interested in the production of green ammonia, green methanol, green fuels, but also in aspects such as sustainable mobility and the storage of renewable electricity, using hydrogen and fuel cells. □

Biomass, a problem and potential at the same time

■ Firewood is the second source of energy in Morocco

■ It endangers the forest

■ Other sources of biomass represent a real potential

WHAT is the second source of energy in Morocco? Coal? Gas? No. The right answer is wood. The commonly accepted figure is 30% of the country's energy balance. The University of Sherbrooke published a study in 2013 confirming this figure. In rural areas, particularly near forest areas such as the Gharb or the Middle Atlas, the collection of firewood is the main source of energy, used for cooking, and, in the mountains, for heating in winter. Each year, more than six million tonnes are taken from the forests, which only produce three million tonnes per year. The withdrawals represent twice the natural capacity of the forests. If one adds the wood provided by fruit orchards (2.15 million tons), agricultural residues (3.15 million tons), one arrives at an annual consumption of 11.3 million tons, according to the National Agency for Waters and Forests.

Direct logging by the populations, in the form of illegal logging, represents the overwhelming majority of firewood consumption. 89% of annual consumption comes from rural households who have no other alternative for cooking and heating, given their very low purchasing power.

If the consumption of urban households who appreciate the comfort of fireplaces is still very low, with 3% of consumption, hammams and public ovens represent 8% of the consumption of firewood.

This illegal logging has a deleterious effect on the forest. It densifies and regresses. While the forest cover is already insufficient, especially in the catchment areas of the dams where erosion fills the reservoirs with mud, reducing the extraction of firewood is a very long-term task.

Reducing demand seems a necessity. A first lever is the improvement of the traditional ovens used by rural households, whose open ovens which are rudimentary, only offer



While the forest cover is already insufficient, especially in the catchment areas of the dams whose erosion fills the reservoirs with mud, reducing the extraction of firewood is a very long-term task (Ph. AFP)

a yield of 10% at best. The National Water and Forests Agency is currently carrying out an action to distribute 60,000 improved ovens by 2024, for the benefit of 300,000 households in 610 rural communes. The Agency hopes to achieve a reduction of 150,000 tons of wood cutting by 2024, the equivalent of preserving 4,000 ha of eucalyptus, which is still very little compared to the enormous quantity of wood being logged.

Inside cities, where people cook with gas and heat with electricity, it is the hammams and bread ovens that use biomass. Morocco has 6,000 to 12,000 such facilities, according to the estimate of the Association of Moorish Bath Owners. All these pre-

mises are heated with wood, an inexpensive energy, used in rudimentary boilers with low efficiency, whose activity ultimately contributes significantly to deforestation.

Faced with this pressure due to habits and faced with the absence of a strategy for reducing the demand for firewood on the part of the public authorities, the use of other sources of biomass is a solution. Some hammams (public baths) are heated with olive pomace from the activity of the oil mills.

The Ministry of Energy and Mining has estimated the potential in terms of biomass in Morocco, between waste from the forestry sector (3.5 million megawatts/hour

per year), agriculture (6.6 million MWh), waste (3.1 million MWh), and wastewater (0.2 million MWh), to stand at 13.4 million MWh/year.

Morocco has some catching up to do, since it is starting from a low base. The primary energy recovered in combustion projects amounts to approximately 1.1 million MWh, according to the Ministry of Energy and Mining. These are mostly isolated projects led by private operators or backed by landfills or wastewater treatment plants. Biogas is not part of the Kingdom's culture, unlike in China or India where 60 million individual digesters produce methane for households from organic waste. Germany has set up an industrial sector that uses livestock effluents to produce biogas on farms or in large power plants. Experimental programs have been launched in Morocco, such as a biogas diffusion program in the Souss-Massa region with the Moroccan Agency for the Development of Renewable Energies and Energy Efficiency (ADEREE), the German cooperation (GIZ) and the Regional Office for Agricultural Development (ORMVA) for the Souss-Massa region. A pilot program for the sustainable management of biomass, and another for the sustainable management of agricultural waste are at the study stage. □

Ismail EL WADI

Biomass, an energy of the future

BIOMASS is an energy of the future, because it is renewable and because its potential is, in some respects, still untapped.

In this case, it is not a question of the exploitation of firewood from forests for firewood, which is progressing in countries where the poor populations have no other alternative than these spontaneous and often irregular logging for cooking and heating. This is the case of countries such as Nigeria or Ethiopia, where very strong population growth has led to a very strong increase in the use of biomass, and concomitantly pressure on forests.

Biomass is growing in developed countries. Germany has multiplied by five the share of its

Source	1990	part%	2019	part%	var. 2019/1990
India	4.520	38,5%	7 998	20,4%	+77%
China	8.392	22,9%	5 299	3,7%	-37%
Nigeria	2.195	78,9%	4 929	74,7%	+125%
USA	2.607	3,3%	4 540	4,9%	+74%
Brazil	2.001	34,0%	3 915	31,9%	+96%
Ethiopia	708	94,9%	1 625	86,7%	+130%
Pakistan	786	43,6%	1 551	33,3%	+97%
Indonesia	1.822	44,1%	1 316	13,0%	-28%
Germany	201	1,4%	1 293	10,5%	+543%
Thailand	625	35,2%	1 143	19,7%	+83%

biomass in its domestic primary energy consumption in thirty years. It has an ambitious plan for the development of biogas from waste or from the effluents from agriculture, especially livestock. Germany still remains at a distance from China

or the United States, whose use of biomass is older. China is also the leading producer of electricity from biomass, ahead of the US. But throughout the world, this electricity from biomass is still modest: it represented only 2% of the total. □

Climate finance

Institutions put their money where their mouth is

■ Developed countries must continue to intensify their efforts

■ Then adapt the budgets according to the goals

OVER the course of the Conferences of the Parties (COPs) and in particular that of Marrakesh, rich countries had committed themselves to mobilizing funds in favor of climate action. In 2020, developed countries provided and mobilized \$83.3 billion for climate action in developing countries. Although up by 4% from 2019, this figure was \$16.7 billion below the \$100 billion per year target originally set for 2020. This is according to a report entitled “Climate finance provided and mobilized by developed countries in 2016-2020” - (Lessons learned from a disaggregated analysis).

Public climate finance (both bilateral and multilateral attributable to developed countries) increased in 2020. It continued to account for the largest share of the total (\$68.3 billion, or 82%). As for private finance mobilized by public climate finance (\$13.1



It is essential to improve not only the quantity but also the quality of climate finance (Ph. DR)

tranche). In addition, 50% of the total was concentrated in 20 countries in Asia, Africa, and the Americas, which accounted for 74% of the population of all developing countries. “We know that more needs to be done. Climate finance increased between 2019 and 2020 but, as we had anticipated, it fell short of the increase needed to reach the \$100 billion target in 2020”, says Mathias Cormann, Secretary General of the OECD, who added that “As

This would make it possible to reach the goal of 100 billion from next year. This is a critical building block for building trust as we continue to deepen our multilateral response to climate change.” By releasing its data, OECD economists hope it will be useful in leading negotiations at the 27th UN climate conference (COP27) scheduled for November 06-18 in Sharm el-Sheikh, Egypt.

Several international institutions are at the bedside of climate (IMF, AfDB, World Bank, etc.). According to the IMF and the WB, “it is essential to improve not only the quantity but also the quality of climate finance”. The Monetary Fund helps by increasing its support for capacity development, which now includes macroeconomic assessment programs, climate-focused public investment management assessments, and green public finance management.

For its part, the World Bank Group mobilized a record \$31.7 billion in fiscal year 2022 to help countries address climate change. This is an increase of 19% compared to the already historic amount of 26.6 billion dollars reached during the previous financial year. The World Bank Group remains the largest multilateral funder of climate action in developing countries. “... We will continue to provide solutions to pool funding from the global community for high-impact, scalable projects that reduce greenhouse gas emissions, improve resilience, and enable the private sec-

tor to mobilize,” said David Malpass, President of the World Bank Group.

In fiscal year 2022 (July 1, 2021-June 30, 2022), investments in climate activities amounted to 36% of

Adaptation and resilience

TOGETHER, IBRD and IDA provided \$26.2 billion in climate finance in fiscal year 2022. Nearly half of that amount, or \$12.9 billion, was used to finance investments in adaptation and resilience. IFC, the private sector arm of the World Bank Group, has unlocked an unprecedented \$4.4 billion in climate finance and raised an additional \$3.3 billion from other donors. MIGA, the Group’s institution specializing in credit enhancement and political risk insurance, has committed \$1.1 billion to finance climate activities. □

Climate finance provided and mobilized (in billion USDs)



Note : Based on biennial reports at UNFCCC, OECD DAC, and based on the Export Credits Group statistics and the amounts subject to additional reporting to the OECD. Upper infographic corrected from (OECD, 2022)

In 2020, developed countries provided and mobilized \$83.3 billion for climate actions in developing countries. Although up by 4% from 2019, this figure was \$16.7 billion below the \$100 billion per year target originally set for 2020

billion), it decreased slightly compared to previous years, while climate-related export credits remained modest (\$1.9 billion). During the 2016-2020 period, the climate finance that was provided and mobilized mainly targeted Asia (42%) and middle-income countries (43% and 27% for lower-middle-income and lower-middle-income countries respectively). upper

countries continue to grapple with the economic and social consequences of the pandemic and war, we see that climate change is having widespread adverse effects and causing loss and damage to nature and people”. For the boss of the OECD, “developed countries must continue to intensify their efforts in accordance with the commitments made in view of COP26.

total World Bank Group financing. This proportion exceeds the target set in the Group’s Climate Change Action Plan for 2021-2025. This plan aims at devoting an average of 35% of the institution’s climate finance activities.

Fatim-Zahra TOHRY

A strategy for climate



The Moroccan financial and banking system had, on the sidelines of COP22, established a roadmap whose aim is to align the financial sector with sustainable development that promotes the emergence of a regional and continental green finance. The idea is to position the financial center of Casablanca as a hub for climate finance (Photo by L'Economiste)

■ Nine projects approved by the Green Climate Fund

■ Only 5 bonds were issued between 2016 and 2018

THE latest global trend is to integrate climate issues into financing policy. Donors have been jostling to be among the pioneers in greening the international financial system.

Morocco could not be out of the game. This is how its financial and banking system had, on the sidelines of COP22, anticipated the movement, by setting up a roadmap. The goal is to align the financial sector with sustainable development and promote the emergence of green finance at the regional and continental level. The financial center of Casablanca would position itself as a hub for climate finance.

This roadmap revolves around 5 major pillars, one of which involves the extension of governance to socio-environmental risk factors. Also on the menu is the development of sustainable financial instruments and products and the promotion of financial inclusion. Added to this is capacity building in the field of sustainable

finance, transparency, and market discipline.

In this same trend, the Moroccan central bank (Bank Al-Maghrib) had published in March 2021 a directive relating to the system for managing financial risks related to climate change and the environment. Such directive is inspired by international principles and best practices enacted in terms of green finance, in particular the recommendations of the Network of central banks and supervisors for the greening of the financial sector. The directive applies to credit institutions and similar organizations for the management of financial risks related to climate change and the environment, according to the 2050 low-carbon strategy carried out by the Ministry of Energy Transition and Rural Development.

According to this very rich document, sustainable and responsible investment practices for banks' portfolios should include an objective of alignment with this strategy. Each bank was supposed to publish a transition plan to achieve this goal.

Morocco has also developed continental leadership in terms of climate finance. To date, 9 national projects and programs have been approved by the Green Climate Fund (GCF) for a total amount of

funding of 227.7 million US dollars, or nearly 2.3 billion MAD. Today, Morocco is considered the largest country in Africa with the most entities accredited by the GCF. These are the Agricultural Development Agency (ADA), CDG Capital, Attijariwafa Bank, and MASEN (Moroccan Agency for Solar Energy). Other entities are in the process of being accredited, such as Crédit Agricole du Maroc, Bank of Africa, AMEE Moroccan Agency for Energy Efficiency, and FEC (Communal Equipment Fund).

■ The green bond market still in its infancy

The verdict is from the World Bank, which recalls that in Morocco, only five green bonds have been issued. The total outstanding amount of green bonds in Morocco in 2020 amounted to approximately US\$400 million, or nearly 4 billion MAD, issued by banks, companies and public companies. To this must be added the ONCF (Moroccan national railroad agency) issue for an amount of 1 billion MAD. No sovereign green bonds have yet been issued by the central government. It should be noted that with the exception of that of the ONCF, all these issues took place between 2016 and

2018, just after the creation of the green bond market. This recent low activity may indicate the existence of barriers to raising capital for these products and constraints to making the projects bankable.

■ **The untapped potential of climate finance:** The financial constraints to implementing a long-term low-carbon energy transition are diverse. Among the most important are the costs of initial investments and transactions in the realization of projects, which are considered high. Also to be mentioned is the lack of financial attractiveness of new low-carbon solutions, and the low exploitation of the potential of international climate finance due to a multitude of factors. The other difficulties relate to the lack of knowledge of the different sources of financing for climate action, and to the complexity of the mechanisms of finance, among other difficulties.

■ Towards a strategy for mobilizing long-term funding :

Given the importance of the volume of financing required for the 2050 low-carbon development strategy, Morocco should adopt a strategy for mobilizing long-term financing. It will be based on the

finance is imperative

diversification of domestic and international resources and innovation in climate financial engineering. To do so, climate marketing for the country's low-carbon projects with international donors is imperative.

■ **A green tax system is necessary:** The authors recommend designing this financing strategy within the framework of public policies that are gradually aligned with the challenge of the low-carbon transition. The idea is to initiate a profound change in the modalities of the public investment and operating budget, of the special Treasury funds, with a view to



GREEN CLIMATE FUND

To date, nine national projects and programs have been approved by the Green Climate Fund (GCF), for a total amount of financing of around 227.7 million US dollars, or nearly 2.3 billion MAD

integrating the imperatives of mitigation and adaptation to climate change, through specific prioritization

criteria and special public order specifications. Likewise, it is important to mobilize new private sources of international climate finance, notably the green bond market, by facilitating foreign direct investments and PPPs. Another

recommendation involves the design of a green tax system, while adjusting energy pricing to accelerate the energy transition of the national economy. □

Mohamed CHAOUI

Bank Al-Maghrib instructions



ACCORDING to the Central Bank directive, it is the administrative body of each financial institution that must examine the financial risks to which the institution may be exposed due to climate change and the environment. The administrative body must then define the strategic orientations of the institution by taking into account the integration of environmental and climatic factors. The administrative body will need to approve the strategy and policy on financial risks related to climate change and the environment. Institutions are working to design analytical tools, including scenario analyzes and stress tests, based on future trends in the context of modeling the effects of climate change. The aim is to estimate the financial risks linked to the climate and the environment and to assess their impact on their business model and their financial indicators. □

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African Youth Climate Hub

A network for the African leaders of tomorrow



■ The network piloted from Morocco mobilizes young African leaders for the climate

■ An incubator will support ten environmental start-ups in 2023

TO fight against global warming, training the environmental leaders of tomorrow is an obvious necessity. This is the objective set by the African Youth Climate Hub, an initiative for the fight against climate change launched by Her Royal Highness Princess Lalla Hasnaa, President of the Mohammed VI Foundation for Environmental Protection, during the 2019 Climate Action Summit organized by the Secretary-General of United Nations.

The initiative is supported by the Youngo network, a group officially representing young people and children at the United Nations Framework Convention on Climate Change which organizes the COPs, the OCP group and the Polytechnic University Mohammed VI of Benguerir. The African Youth Climate Hub aims to deploy on its network an incubator, a training center, a forum, an observatory, a

The ambassadors of the African Youth Climate Hub carry the voice of African youth. Here in New York in 2019 as part of the Youth Climate Summit (Ph. DR)

dashboard to monitor the project and the mobilization of young people.

Giving substance to such a network of young people on a continent as vast as Africa, which has 54 countries and speaks 2,000 languages, is a real challenge. The first step was to build an Internet infrastructure, housed in the Hassan II International Environmental Training Center, the academic arm of the Mohammed VI Foundation for Environmental Protection. The Center has the technological means to support a network, lead conferences, training sessions, all remotely. The network

and its partners, the OCP group and the Mohammed VI Polytechnic University of Benguerir have begun to lay the first stones of the network. An incubator was launched at the end of 2021 (see box). The first course of the e-learning program was put online at the time of COP26 in Glasgow, Scotland. This MOOC (Massive Open Online Course) is the first stone of a program that will provide young Africans with knowledge on climate, water consumption and management, and renewable energies. Finally, to forge this environmental awareness and

community of African destiny, young ambassadors have been selected on the continent and regularly participate in international events where they come to carry the voice of African youth. In Glasgow in 2021, as in Sharm El-Sheikh in 2022, young ambassadors came from different African countries to participate in the high mass that constitutes the COPs. An opportunity for them to forge this environmental awareness, to convey messages of youth in the many parallel events of the conference. □

Ismail EL WADI

An incubator for environmental projects

THE incubator of the Youth Climate Hub was officially launched on December 17, 2021, with a continental promotion campaign to attract projects. Success was immediately evident with 218 candidate projects from 26 African countries. The projects were evaluated during the year 2022. The sample was first roughed out. The applications of young Africans selected have gone through an initial evaluation carried out by their peers, so to speak: it is a

committee of twenty members, composed exclusively of young people, half from the Youngo network of the UNFCCC, and half another half of the AYCH ambassadors, who selected fifty projects. A committee of experts from the Mohammed VI Polytechnic University and the Foundation narrowed the selection to twenty projects, before the strategic committee retained the ten projects to be carried by the incubator, the list of which will be definitively

decided upon at the end of the year.

The incubator will offer the selected start-ups a personalized six-month program during which they will benefit from training workshops to transform their ideas into operational technologies. The training program will provide young entrepreneurs with elements of law, strategy, marketing and communication, psychology, as well as climate knowledge, necessary for their success. □

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