

From COP21 to COP22: Keeping up the Momentum



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Abstract

In December 2015, a new international climate agreement was adopted, paving the way for increased mitigation and adaptation efforts. Governments firmly expressed the need for rapid action and 2016 will put the credibility of their commitments to the test. Climate policies are actually becoming more widespread, but they are also adjusting to local constraints and needs, suggesting that the establishment of a global emission regulation model is unlikely in the near future. While the low-carbon transition is well under way, its pace and conditions still appear too uncertain to fully convince economic decision-makers of the value of carbon-free options. COP22, which will take place in Marrakesh in November 2016, will be an opportunity to leave these hesitations behind by strengthening mutual oversight, by consolidating the principle of climate justice, and by furthering the discussion about the best ways to orchestrate the transition to carbon neutrality.

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Introduction

The Paris Agreement, which was adopted on 12 December 2015 during COP21, established a new cooperation framework for climate protection. This framework appears both robust and fragile. It draws its strength from the unanimous support expressed by the 196 Parties to the United Nations Convention on Climate Change; 23 years after beginning negotiations, a legally-binding universal agreement has finally been reached during COP21, and it is backed by 189 national contributions that detail the efforts each country is willing and able to deploy by 2025-2030. While the commitments made during the second phase of the Kyoto Protocol (2012-2020) only covered 12% of worldwide emissions, more than 90% of these emissions are now covered by the 2015 contributions. Besides the large participation, a long-term goal was agreed, namely to reach carbon emission neutrality within the second half of the century. To this end, the Parties will meet every five years to submit new pledges and reinforce their medium term objectives. By combining worldwide efforts, a long-term target, and five-year reviews, the Paris Agreement allows a glimpse of a long-awaited appropriate response to the danger of climate change.

On the other hand, the feeling of great fragility is due to the relative lack of individual constraints. This essentially forward-looking agreement mainly relies on collective escalation of efforts to curb temperature rise and prepare for the consequences of global warming. As a whole, the 2015 contributions do not lower 2025-2030 emissions, instead, they merely slow their growth compared to the business-as-usual scenario. Therefore, although the agreement reaffirms the need to limit global warming to +2°C – or even to +1.5°C – compared to pre-industrial temperatures, these 2015 contributions have *a priori* set us on a 2.7 to 3.5°C warming trajectory. This is due to the Parties' refusal to question how ambitious each contribution really is, in the name of respecting national sovereignty. Thus, the promises were accepted as-is and their achievement is subject only to a best-efforts obligation. Therefore, it remains to be seen if, on the one hand, the national governments will actually implement their contributions, and on the other hand, whether they will successfully rectify their initial delays and provide individual efforts in the future that will adequately address the climate challenge.

It is preferable to avoid rushing to conclude that the outcome is mixed, remembering instead that the success of the COP21 mainly lies in the

balance struck between strictness and flexibility. National governments had to be assured that the text would be non-intrusive in order to avoid discouraging participation. Likewise, any categorical judgements of the 2015 contributions had to be avoided, in hopes that this would set off the revision cycle and guarantee a sustainable agreement. Negotiators have certainly learned from past conferences. They opted to side-step the intractable debate over what constitutes a fair distribution of efforts, while ensuring that contributions would be more concrete than the mere declarations of intentions presented at the 2009 Copenhagen Conference. In a pursuit of continual progress, the COP22 is already being introduced as “the COP of Action”. This needs to be understood not only as a desire to cultivate a positive and constructive approach, the “spirit of Paris”, but also and mainly as confirmation that the carefully-chosen language used by diplomats will lead to tangible and rapid progress.

How, then, will this goal be achieved and will engagement be amplified? It is first necessary to understand what COP21 has changed from public decision-makers’ perspectives and to determine the outlines of post-COP21 climate policies. We must then assess how economic players have received the Paris decisions and understand how the attractiveness of low-carbon investments has evolved over the past year. And lastly, a few weeks away from the Marrakesh COP, this synopsis of the driving and opposing forces in the low-carbon transition will help identify key drivers of fully-effective international cooperation.

Post-COP21 climate policies: between voluntarism and a lack of overall consistency

Climate policies no longer concern only a small circle of pioneering countries. Before submitting their numerous national contributions, each Party to the Climate Convention prepared a situational analysis of its vulnerabilities, constraints and room for manoeuvre. The French and Moroccan presidencies have stressed that the first post-COP21 challenge will be to translate these national contributions into “*investment plans for mitigation and adaptation*”¹. Once again, the implementation of the Paris Agreement will depend on each national context. The question will no longer be what is fair and just, but what measures are feasible.

A patchwork of emissions reduction measures

The Paris Agreement marked another break from the Kyoto Protocol; the idea of a worldwide carbon market as a single solution has been somehow set aside. The text cites climate economists’ consensus, “*the important role of providing incentives for emission reduction activities, including tools such as domestic policies and carbon pricing*” (paragraph 137, COP Decision). On the operational level, Article 6.2 paves the way for connecting local, national or regional markets by referring to “*cooperative approaches that involve the use of internationally transferred mitigation outcomes*”. While this global carbon market option is now legally possible, it is not deemed a prerequisite for the successful fight against global warming.

In practice, there has been real progress: 40 countries and more than twenty cities, regions and Federal States have applied a price to carbon emissions in a number of economic sectors, covering 13% of worldwide emissions (Global Bank and Ecofys, 2016). The Carbon Pricing Leadership

1. “Taking the Paris Agreement forward: Reflections note by the President of the twenty-first session of the Conference of the Parties and the incoming President of the twenty-second session of the Conference of the Parties”, 6 May 2016, available at: <https://unfccc.int>.

Coalition, which was formed in connection with COP21, aims for 25% worldwide coverage by 2020. Real progress has been achieved, as half of the 2015 national contributions made reference to carbon pricing. Nevertheless, these efforts remain sparse and lack direction. On the one hand, coverage is expanding too slowly. On the other hand, carbon pricing tends to develop in different ways in each territory; current figures show that prices varied between €1.9 and €123 per ton of CO₂ in 2015, depending on location (Medde, I4CE, 2016). These two observations imply that carbon pricing cannot be the sole response to the climate challenge, at least not in the short term.

The first half of 2016 appears to confirm that progress in emissions reduction will be made with more varied initiatives. While this is not a comprehensive assessment of the most recent announcements, we have identified below key themes that will structure post-COP21 climate policies:

- **Putting an end to tax benefits for fossil fuels.** The removal of subsidies for fossil fuels has been gaining ground and it is widely considered to be a prerequisite for an effective fight against global warming; this has been aided by the low price of hydrocarbons, which makes the measure less detrimental to consumer purchasing power. In connection with COP21, nearly 40 governments have officially called to stop maintaining artificially-low prices on fossil fuels in order to lower global emissions by 10% by 2050 and to reallocate the approximately 500 billion dollars per year spent on fossil fuel subsidies. In addition to the many national reforms, which were notably adopted by fossil fuel-producing countries, the G7 Member States have decided to make fossil fuel subsidies one of the key stakes of international cooperation. In their May 2016 meeting, they have, for the first time, set a deadline, namely 2025, for the elimination of these tax incentives under their respective jurisdictions. The G20 did not announce a similar deadline in the September 2016 summit, though nearly 200 NGOs and a global group of insurance providers called for one; instead, it settled for a renewed injunction to eliminate such subsidies as soon as possible.
- **Limit or even forbid the most carbon-intensive activities.** In particular, this includes planning a decrease in coal combustion, which should have no place in a decarbonisation scenario. Coal consumption has been a driver of economic growth in China as well as its main source of emissions and the primary cause of air pollution. It has doubled in China between 2004 and 2014 (EIA, 2016). The Chinese government intends to break with this tendency

and, in its 13th five-year plan in March 2016, it has set the goal of capping its coal consumption at 5 billion tons in 2020. The first concrete measure in this direction is to, over a three-year period, close 4,300 mines of the 11,000 operating in 2015. Such restrictions echo more radical decisions to phase out coal in the electric sector. These were announced by the United Kingdom a few days prior to the COP21 with a 2025 deadline, followed by Oregon in March 2016, the first US State to pass legislation on phasing out coal by 2035. A similar approach has also occasionally been discussed in the field of transportation. Proposals to leave gasoline and diesel behind and only authorise the sale of electric- and hydrogen-powered vehicles are currently being debated in Norway, the Netherlands and Austria. However, no formal decisions have been reached on these proposals.

- **Regulating to obtain more efficient usage of fossil resources.** Without carbon pricing, defining efficiency standards can also force change in practices and production tools. The United States prioritise such regulations for the decarbonisation of electricity production, through the Clean Power Plan, which was finalised in 2015, as well as for reducing methane emissions linked to hydrocarbons production. US President Barack Obama and Canadian Prime Minister Justin Trudeau have, as leaders of large oil- and gas-producing countries, committed in March 2016 to reducing methane emissions in the oil and gas sector by 40-45% by 2025, compared to 2012 levels.
- **Supporting innovation and the deployment of low-carbon technologies.** The progress achieved in recent years, makes the perspective of seeing “energy miracles²” more realistic. Public support to innovation was given unprecedented attention during COP21. “Mission Innovation”, launched in December 2015, brings 20 countries and the European Union together. It requires its members to double their low-carbon energy research and development budgets within the next five years. These efforts should provide an additional investment of 15 billion dollars in 2021. Additionally, taxpayers and consumers are also being encouraged to support technologies that use less carbon and/or that are more energy-efficient than their competitors, even if they are not yet fully competitive. In this respect, we note that tax credits for

2. B. Gates, « We Need Energy Miracles », The Blog of Bill Gates, 25 June 2014, available at: www.gatesnotes.com.

renewable energy investments and production were extended by the US Congress at the end of December 2015, and that in May 2016, the German government adopted a new plan to promote electric vehicles with a budget of 1.1 billion Euros. These recent examples are just a few from a long list of support measures introduced by developed and emerging nations in an effort to protect the climate, while also supporting promising new industries.

These observations show that climate considerations have not been relegated to the background after the close of the Paris Summit and that they continue to bring about new initiatives. In line with the bottom-up approach favoured during COP21, climate policies tend to be tailored to each nation, which should play in favour of their acceptability, though it makes reading the global transition more complex.

Election cycles and the credibility of commitments

Without the United States and China, which together represent 38% of global emissions, there would have been no Paris Agreement. Similarly, if one of these two countries were to fail and renounce its objectives, widespread disengagement would likely follow. While the fight against global warming is viewed as an opportunity for investment growth, governments keep in mind that the climate burden must be shared, and most of them will not make any commitments unless other high-emissions countries participate as well.

By its very nature, democracy creates uncertainty as to whether the promises made by the leaders holding power in December 2015 will be kept. Sometimes this can be in a positive direction, as is the case with the election of Canada's Justin Trudeau as Prime Minister and his early 2016 incentives to reinforce the country's climate policy, and sometimes this can take a more ominous turn, as is the case with the US presidential election. These fears arise from Donald Trump's proclamations as the Republican nominee. While providing the details of his energy and environment program in his campaign speech in North Dakota on 26 May 2016, Trump repeatedly declared that he plans to cancel the Paris Agreement, as he believes that the United States should not be limited in the amount of energy they use. Without predicting the outcome of the US elections, these attacks reveal the fragility of the support for the environmental policy led by President Obama during his second term. The Clean Power Plan, the cornerstone of US climate strategy, is currently being challenged in court and its implementation is suspended until all appeals have been exhausted.

As Congress is clearly hostile to climate-protection initiatives, President Obama has always had little leeway. The ultimate fear is that if Donald Trump comes to power, everything that had been painstakingly achieved would unravel. Thus, the delegations will hold their breath until the 8 November 2016 vote, which is the day after the opening of the COP22, and will set the tone for the remaining negotiations.

Nevertheless, we should not forget that there are safeguards. Firstly, the rapid entry into force of the Paris Agreement opens a three-year period during which the United States cannot not withdraw, in accordance with Article 28 of the Agreement. The request for withdrawal could then only be made in 2019, and it would be effective one year later, at the very end of the presidential term. Secondly, a federal reversal is unlikely to challenge the achievements in terms of emissions reduction, because these are closely linked to the competition between gas and coal, to increased competitiveness of renewable energy, and to the proactive policies of many Federal States. The risk then is not so much a complete reversal, which would lead the United States to withdraw entirely from international climate negotiations and to actively support a high-carbon economic model. Rather, the risk lies in them reconsidering their priorities, which would lead to the international community losing a recent-yet-decisive ally in the fight against global warming.

More generally, the fact that the United States' participation in the Paris Agreement is already a theme of the next presidential campaign poses the question of the Agreement's sustainability, even though it sets goals for the second half of this century. Provisions in international law may make disengagement more complex without making it impossible. However, 2015 has shown the power of peer pressure when it comes to discipline. The risk of diplomatic isolation was certainly a factor in convincing reticent countries that it was in their interest to support the negotiations and to provide their national contributions within the allotted time frames. In the future, this can teach us to think of COPs as opportunities to maintain mutual oversight, even without legal constraints.

Climate-compatibility: a new criterion for public decision-making

By the presence of many heads of State and government officials at the opening of COP21, the record levels of participation in the signature ceremony of 22 April 2016 and the efforts made to ratify the Agreement as quickly as possible, Parties to the Convention demonstrated their strong political will. The underlying idea, borne by the Agreement itself, is that the

COP21 helped reach a tipping point. By agreeing to this trajectory towards emissions neutrality, governments accept a duty of consistency that extends beyond the proposals put forward for 2025 and 2030. “Aspiration” and future “ambition” have been added to the “incremental” dimension of climate policy. Today’s decisions may then be questioned, not only in terms of their compliance with the commitment to reduce emissions in the medium term, but also in terms of the economic model they contribute to and the consistency of this model with the goal of carbon neutrality. In short, the Paris Agreement paves the way for “climate compatibility” tests for public decision-making.

First and foremost, the debate centres on major infrastructure projects, usually energy infrastructures, as these are considerable investments that create a supply scheme designed to last for several decades. These recent objections notably led to the failure of the Keystone XL oil pipeline extension project which was designed to reinforce the transportation of crude oil from the oil sands of the Alberta province in Canada to the refineries in the Gulf of Mexico. Putting an end to seven years of controversy, President Obama finally decided in November 2015 to reject this project, not only due to the additional emissions it would generate, but rather for the fundamental inconsistency with the “climate leadership” position that the US now aspires to. While the Obama administration prepares the next plan for selling exploration licences for 2017-2022, environmental NGOs have been using this same inconsistency argument to avert the extension of oil production zones to the Arctic Ocean. Setting limits on fossil fuel offers is a complex and difficult question for producing countries. To take the heat out of the debate about creating new routes of Canadian gas and oil export, the new Prime Minister Justin Trudeau decided in January 2016 to reinforce the approval procedures by including a climate resilience test. Its aim is to evaluate greenhouse gas emissions related to the production of the resources that will pass through these new routes, so that this criterion may be included in the decision-making process. Time will tell whether this initiative will settle the debate or simply carry it over to the parameters of the resilience test.

Since the objectives for the second half of the century are now the reference, planning exercises should play a more central role. They should help shed light on the issue of the compatibility of current decisions with long-term targets. The Paris Agreement takes this into account. The Parties have been invited to communicate their low-carbon development strategies for 2050 to the Convention Secretariat by 2020, in order to close the gap between the collective objectives beyond 2050 and individual contributions which are updated every five years. This exercise will make each country

show its cards and state how it intends to participate in this multi-decade collective fight. Conclusions will then be drawn for each activity sector, which will set aside decisions that would lead to a future with too much carbon and better identify investment needs. To date, Canada, China, the United States, and the European Union have confirmed their intention to publish such strategies as quickly as possible. Once again, we will have to count on a knock-on effect for this practice to spread and for it to become unthinkable to not make projections for 2050.

Tension between economic development and climate protection not yet resolved

The influx of good news about mitigation initiatives should not mask the reality that investments in carbon-based solutions continue. Thanks to the rise of renewable energies and the reorientation of its growth model towards the interior market and services, China may be the country to achieve the largest emissions reduction in the next 25 years (BNEF, 2016). However, this threat seems to be moving towards the other emerging nations, notably India and nations of South and East Asia. In these regions, energy demands have shown significant growth; the electricity demand is expected to increase fourfold in India by 2025 (BNEF, 2016). Yet it is to be feared that these new needs will not be exclusively met with low-carbon solutions. The Modi government in India intends to both increase its renewable energy production fourfold between 2015 and 2022 and to double its domestic coal production by 2020. On balance, India intends to be part of the solution to climate disruption, but in the name of climate justice, it will refuse to prioritise low-carbon technologies if they are detrimental to economic development. We have to remember as well that the President of the Philippines, Rodrigo Duterte, stated in July 2016 that his country would not be able to keep its mitigation commitment, instead defending its economic interests. Two solutions appear possible: either innovation makes great leaps and bounds, pushing polluting solutions out of the market, or developed countries provide sufficient financial assistance to guarantee access to low-carbon solutions.

Furthermore, although these energy transition policies do not yet appear to have been compromised by the drop in fossil fuel prices, their long-term resilience has yet to be confirmed. In the electricity sector, costs have rapidly decreased for solar and wind turbine energies in recent years, reducing the necessary subsidies for large-scale deployment. However, in the sector of transportation, which represents no less than 23% of global CO₂ emissions (IEA, 2015), low-carbon solutions have not yet seen such growth. In the event that technological progress would be slower than

expected, the issue will become how much financial support each State would be willing to provide to compensate the growing gap of competitiveness compared to fossil fuels.

Finally, we must recognize here too that the idea of sharing the climate burden persists even when each country has made commitments. The fear is no longer of making an isolated move, but of having a more ambitious initiative than one's business partners. Emerging countries are also raising their voices in the fierce debate about emissions reduction in the area of international transport. The risk is that international rules increase the costs of routing merchandise and which could potentially be an obstacle to exports. The International Civil Aviation Organisation (ICAO) has nevertheless adopted a CO₂ certification standard and a carbon compensation mechanism that would be applied on a voluntary basis between 2021 and 2026 before becoming mandatory in all States starting in 2027. Meanwhile, the International Maritime Organisation (IMO) is taking steps towards a new fuel use tracking system, and will only later rule on the need to take coercive measures.

In short, the first semester of 2016 confirms the global progress of the transition to low-carbon, though we must recognize that past debates are still ongoing. Indeed, they have become deeper and call for new answers in terms of international cooperation. These answers must also take into account the post-COP21 economic realities.

Awaiting a complete switch to the low-carbon economy

In the low-carbon transition process, public policies influence the parameters of economic decisions. Regulatory constraints and other incentive measures must encourage carbon-free choices. In other terms, the economy cannot transition to low-carbon without the rules of the game being changed. And yet, it is still necessary to detail the reactions of economic decision-makers to the outcome of COP21. While the Paris Agreement is dedicated to protecting the climate, it is also an economic agreement. Its Article 2 calls to make “*finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.*” In the aftermath of COP21, the question is whether economic decision-makers have heard the call for a carbon-free future and whether it will have an influence on their investment decisions before these objectives have even been fully translated into national legislations.

A clearer picture, but no positive shock in favour of low-carbon solutions

The Paris Agreement aims to create a self-fulfilling prophecy: by sending a clear signal that governments are determined to respond to the climate challenge, it would make the global transition to low-carbon the only credible scenario. Once this certainty has been firmly established, economic leaders would see that their interest lies in anticipating reinforced climate policies and prioritising low-carbon solutions right away in order to achieve greater future profits. By making such decisions before regulatory constraints compel them to do so, investors would pro-actively facilitate fulfilling the initial prophecy.

The 2016 edition of the annual survey conducted by the World Energy Council (WEC, 2016) brings light to this sensitive question of anticipations. Climate policy has constantly been cited since 2009 as once of the most critical uncertainties in the future of this sector. In 2016, it maintains a strong position in this ranking, though the WEC has observed a strong decrease in uncertainty compared to the previous year, while the impact of climate regulations is still perceived as being as essential as in 2015. It then

appears that COP21 did in fact reinforce the credibility of the low-carbon scenario.

A positive effect on the valuations of businesses whose activities should expand with the low-carbon transition has been observed upon the announcement that an agreement had been reached. Immediately after 12 December 2015, considering that 80% of national contributions made reference to the deployment of renewable energy, the shares of US companies in the solar energy sector all climbed by an average of 5%. However, this increase needs to be put in perspective with the 30% climb for these same companies a few weeks later when US Congress voted the extension of the investment tax credit until 2019. These differences serve as a reminder that the market is more sensitive to concrete national measures that directly impact companies' short-term profits than to collective statements of intent for the second half of the century.

It should also be remembered that green stock market indexes, such as S&P U.S. Carbon Efficient have not known a significantly different evolution in recent years than the main indexes, such as S&P 500 (Farid *et al.*, 2016). While the renewable energies industry is rapidly expanding with a new investments record of 286 billion dollars in 2015 (REN 21, 2016), the MAC Solar Global Index that covers the main solar energy companies has shown a 28% decline between April 2015 and April 2016, whereas the S&P500 has been relatively stable over the same period. This bearish trend could be explained by the slowdown of global growth, leading to the fear of excess solar panels offers and could also be explained by the price decline of oil and commodities in general, even though the price of photovoltaic technologies has been dropping at the same time and they are for the most part protected from competition thanks to public subsidy measures. Likewise, investor confidence has probably been affected by the bankruptcy of Sun Edison in April 2016, as this company was long-perceived as one of the most promising in the sector. While COP21 gave indications on the nature of the activities that will prosper in the long term, it did not provide any assurance that the business models are viable and that profits will materialize in the medium term.

Greening finance, an empty promise?

COP21 preparatory work and the Paris Agreement itself emphasize the role of finance as a vehicle for the low-carbon transition. In the current context, which some call a period of secular stagnation, there is a clear benefit in directing the abundance of available global savings to the investment opportunity that is the low-carbon transition. Merely implementing

national contributions would require 13.5 trillion dollars into energy efficiency and low-carbon technologies between 2015 and 2030 (IEA, 2015).

In practice, segments of finance have already become green. The strength of the green bonds market attests to this. These tools, which were introduced in 2007, are dedicated to financing environmental projects and were met with clear success with institutional investors, sovereign funds, pension funds and insurance companies, and now appeal to an even wider investor base which includes banks and companies. A new record was set in 2015, with 41.8 billion dollars of green bonds issued (Climate Bond Initiative, 2016). However, these new tools do not yet yield any concrete benefits for project carriers compared to conventional tools. Governments could opt to encourage investment in green bonds through tax credits, prudential rule changes or by granting public guarantees in order to lower capital cost. That being said, such measures should be weight against conventional climate policies, which aim to improve the profitability of the projects themselves (Shishlov *et al.*, 2016). Simultaneously, the fossil fuel divestment campaign has gained ground, with a current estimated divestment volume of 3.4 trillion dollars (Go Fossil Free, 2016). But here too, the movement mainly involves institutional investors, who represent a fringe minority of capital owners, though it must be recognized that this is a growing minority.

However, when widening focus to the community of investors as a whole, we observe relative indifference to the impact of investments on the climate. A May 2016 study conducted by the Asset Owners Disclosure Project NGO shows that the 500 top global investors were currently taking no measures to reduce or even to appraise the risk exposure of their portfolios to climate change. This means that they are not preoccupied with the consequences of a potential reinforcement of climate policies on the profitability of the activities they fund. Only one fifth of these key investors are taking real measures to leave behind high-emissions sectors or to encourage the entities that they fund to reduce their carbon footprints. One possible explanation to the wait-and-see attitude of investors is the lack of comprehensive and structured information about the nature of this climate risk, which is also called transition risk. A task force of the G20 Financial Stability Board has been tasked with conducting a detailed study on the impact of climate regulations on the global financial system. It is expected to formulate recommendations to investors and companies in order to better integrate climate risks to financial information by the end of the year. In the same spirit, French institutional investors and their intermediaries must henceforth, as of 2016, produce reports on their

portfolio's carbon footprint and the amount of their assets which participate in the decarbonisation of the economy, while also setting out a low-carbon strategy. Encouraging a better appropriation of climate issues would shift perceptions of aligning portfolios with the Paris Agreement as being about reputation to being about maximizing shareholder value.

In sum, it is likely illusory to believe that finance may become fully green without the rules of the game in the economy also doing so. The incomplete picture of climate policies has not yet caused the financial community to change directions. It does however lead to questioning, as shown by the June 2016 decision by financial rating agency Moody's to use an emissions evolution scenario derived from the 2015 national contributions to measure the climate risk exposure of 13 industrial sectors. Financial stakeholders are now fully warned and they will be closely watching how the commitments will be implemented in order to adjust their portfolios in due time.

Shifts in the energy industry: a sign of the times?

While the implications of COP21 may be too vague for the financial community to believe there is any urgency in limiting its exposure to climate risk, these preoccupations still appear increasingly credible. Climate-related resolutions put forth at the annual general meetings of high-carbon companies have become both more numerous (170 in 2016 vs. 93 in 2011) and more specific (Novethic, 2016). Although these resolutions do not systematically garner majority support, as in the case of the refusals by ExxonMobil and Chevron shareholders in the spring of 2016, more and more companies are deciding to not ignore the issue. European oil majors BP, Shell, Statoil, and Total have already adopted climate "stress tests", designed to assess the resilience of their business model in the scenario where temperature increase is limited to 2°C.

In addition to these transparency efforts, these oil and gas companies have made a number of decisions in early 2016 that demonstrate a desire to diversify their activity. The operator Eni presented a billion-euro renewable energy investment plan in May 2016 in Italy, Pakistan and Egypt; meanwhile, Shell announced the creation of a "New Energies" division with plans of developing its business in wind turbines. At the same time, ExxonMobil was partnering with FuelCell Energy to develop CO₂ capture technology and Total was concluding the takeover of Saft, the battery manufacturer for nearly a billion dollars. None of these companies intends to abandon their core business, exploitation of hydrocarbons, but

they are identifying business opportunities brought about by the low-carbon transition and are positioning themselves to benefit from it. In addition to the effects of COP21, these strategic developments are also encouraged by the low price of commodities, which lowers the break-even point for oil and gas projects, limiting investment opportunities in this field, at least in the short term.

The dominant feeling is that the economic sector is at the dawn of profound changes. The large decrease in the costs of a number of technologies, such as solar panels, which cost 80% less than six years ago, the industrial enthusiasm for energy storage, and the promises of Big Data point to large changes in conventional schemes for energy supply. And yet, at this stage, we do not know which technologies will win out or when they will be mature. An interesting coincidence is that Sun Edison's bankruptcy, which was mentioned earlier, happened only eight days after that of another iconic American company, Peabody Energy, in the coal industry. While these are two isolated cases, their co-occurrence reinforces the idea that the energy sector has reached a turning point, although the rest of the path is not fully visible yet.

This climate of uncertainty appears in the prediction gaps between the various scenarios of the evolution of the global energy mix. For example, the EIA, the U.S. government's Energy Information Agency, does not predict a significant breakthrough of electric vehicles by 2040. In its reference scenario which was published in May 2016 and which only takes into account public policy that has already been passed into legislation, it estimates that only 1% of light-duty vehicles will run on electricity by 2040 (EIA, 2016). Yet, the June 2016 scenario proposed by Bloomberg New Energy Finance suggests that electric vehicles will account for no less than 25% of the 2040 fleet (BNEF, 2016). In the context of this same debate about the speed of the ongoing transition, BP stressed its 2016 statistical review that it took 40 years for oil to grow from 1 to 10% of primary energy consumption and 50 years for gas to grow from 1 to 8% (BP, 2016). The real question is whether past inertia is a lesson for the future.

It comes as no surprise that the energy sector would be the most subjected to questioning and upheavals in the low-carbon transition, as it is responsible for two thirds of greenhouse gas emissions (IEA, 2015). Clear signals show that the reconfiguration of this sector is under-way; longstanding stakeholders no longer reject the terms of the debate about the future of fossil fuel production and the low carbon technology sector is increasingly attractive to them. Nevertheless, each stakeholder appears to be carefully placing its pawns while awaiting the alignment of technological, legal and societal innovations.

What ways forward for international cooperation?

The landscape described earlier shows that an international climate agreement, no matter how innovative and ambitious it may be, does not mark the end of the fight. Many uncertainties remain over the credibility of a carbon neutrality scenario for the second half of the century. Beginning in 2016 and at COP22, the Paris Agreement must come to fruition, both by working on its formal implementation and by curbing opposing forces and removing any obstacles to reinforcing the initiatives.

Relying on mutual surveillance

The biggest strength of the Paris Agreement is that it declared a common goal: preventing the dangers of global warming. Never before had a climate summit mobilised so many diplomatic apparatuses or generated so much media interest. It is now necessary to seize every opportunity, beginning with COP22, to remind stakeholders of this consensus and to require increased engagement.

Several points of the Paris Agreement itself must be clarified as soon as possible so as to leave no room for restrictive interpretations. The first of these points is transparency, which is essential to maintain trust between Parties. The first thing that must be done is to clarify as much as possible the content of each national contribution in order to allow for future reliable comparison of the efforts of each country. This presupposes the development of a consistent approach to monitor the implementation of these contributions in addition to the inventory of emissions. Great progress has been achieved in making this reporting exercise required every other year for developed and developing countries. There remains the problem of ensuring that relevant information will be given, while taking into account the differences between the administrative capacities of the Parties. As concerns the funding granted and mobilised by developed countries, the issue is to agree on accounting rules in order to put an end to methodological disputes and provide a reliable and undeniable vision of the scope of the support provided to developing countries. Finally, the nature of the 2018 “facilitating dialogue” must be clarified. Indeed, the Paris Agreement stipulates that the Parties must provide the first global

report showing the progress achieved, foreshadowing the five-year stocktake which will officially begin in 2023. This meeting must be the opportunity for rich exchanges about individual progress, such that by 2020, the Parties communicate more ambitious national contributions than the first 2015 versions. The Agreement makes this possible; now it is time to firmly establish this 2018 dialogue as a vital milestone.

Climate protection requires international cooperation outside of the UN as well. In connection with COP21, “climate clubs” began to form to create strong action in the field of solar energy (International Solar Energy Alliance), carbon pricing (Carbon Pricing Leadership Coalition) and clean energy research and development (Mission Innovation). These clubs bring together a number of States that want to move forward faster, and encourage them to adopt targeted measures to advance the shared mission. Once they have been launched, the next challenge will be to remind governments of their commitments and ensure results are delivered. Mobilisation must also continue through regional organisations and international economic forums such as the G7 or G20. These regular meetings provide the opportunity to set new goals and new milestones, as was recently the case at the G7 with the end of subsidies to fossil fuels and the development of long-term low-carbon strategies. And finally, climate must be systematically addressed in bilateral relations. As economies are largely interconnected, the joint announcement of new commitments helps to bridge gaps in regulation and limit the risk of carbon leakage.

Beyond the State level, climate action must become a standard of respectability in the private sector as well. Launched in COP20 in Peru, the solutions agenda provided a framework for the growing engagement of non-State stakeholders, cities, territories, private stakeholders and civil society organisations. Nearly 10,000 individual initiatives have been recorded on the NAZCA (Non-state Actor Zone for Climate Action) platform; these were showcased during COP21. Building on this success, the solutions agenda must continue to prosper and highlight good practices, reinforce the low-carbon scenario by showing that major advances are being achieved, and encourage the most reluctant stakeholders to make commitments as well and thus avoid being excluded from the majority participating in the momentum. In addition to COPs, which reflect the initiatives, other federative structures will have to be designed to support long-term engagement and avoid the dissipation of efforts and information. Multiplying joint announcements and ensuring regular follow-up is a way to maintain pressure and progressively impose the obligation to do more and faster.

Putting the thorny issue of climate finance at the heart of negotiations

While the adoption of the Paris Agreement was a general relief, it does not erase the persistent divisions between developed and developing nations. The low-carbon transition tends towards global adoption due to the fact that low-carbon solutions are more affordable and that developing nations believe that it is in their interest to commit. However, it seems unlikely that these efforts would be sufficient and that developing countries would systematically reject carbon-intensive solutions without receiving sufficient financial assistance. Indeed, the long list of national contributions includes some which explicitly call for international funding to implement the proposed efforts. Others offer two emission reduction targets: one that is said to be unconditional and a second, more ambitious target, said to be conditional as it depends on external financial support. The principle of climate justice also dictates that countries which have contributed little to the accumulation of greenhouse gasses should receive support in their efforts to adapt to climate disruption. On this matter, it should be remembered that the African continent currently represents only 4% of global emissions, but that it already must support adaptation costs of around 7 to 15 billion dollars by 2020, though only 1 to 2 billion dollars per year are currently allocated to this issue (PNUE, 2015).

The issue of funding is discussed in Article 9 of the Paris Agreement, which reaffirms the obligation of developed nations to financially support the mitigation and adaptation efforts of developing nations. Developing nations are also encouraged to voluntarily participate in funding efforts, taking into account changes in economic realities. It is however necessary to refer to the decision accompanying the Agreement to see the detailed figures of funding efforts. The targeted 100 billion dollar per year mobilised by developed countries starting in 2020 has been confirmed. To rise above this lower limit, a new goal figure should be defined by 2025, though the mandatory contributors list has yet to be determined. In sum, the achievements and the trajectory have been reinforced but there is still some uncertainty as to the distribution of the collective efforts between countries and between public and private funds.

Therefore, this must continue to be discussed in order to ensure that developing countries receive guarantees and predictability. The next step laid out by the support decision involves establishing a “roadmap” for the rise in funding from developed countries to reach the target of 100 billion dollars. While there are strong expectations surrounding this document, it is important to recognize the difficulties faced by donors in diving greater

visibility, since budget commitments are usually made on a yearly basis. However, this does not preclude clarifying existing initiatives, formulating development hypotheses or introducing a halfway target to solidify the path to 100 billion dollars. Finally, this roadmap must provide answers concerning accounting for climate finance. We note, in particular, that the estimated 62 billion dollars mobilised in 2014 and presented by the OECD in October 2015 were strongly contested. It is necessary to put an end to methodological disputes by clarifying the scope of climate financing and to provide measuring instruments for the leverage effect on private finance.

Providing easier access to funding must be the other key area of work. Once the funds have been raised, they must be rapidly allocated, which presupposes having enough financing files that comply with donors' standards. To date, the Green Climate Fund has a 2.4 billion dollar project pipeline ready for evaluation, a figure very close to its 2.5 billion dollar 2016 disbursement target. However, as underlined by the officer of the Fund in May 2016, the proposals are at various stages of development and they cannot all be expected to be accepted in 2016. The Fund must receive more projects, and higher-quality projects³. We also note that the majority of the proposed projects for the Green Fund come from multilateral organisations, while national and local stakeholders are still holding back (Rai and Best, 2016). This is not a new issue and donors are beginning to launch initiatives to assist in the implementation of national contributions and in the background work for submitting funding applications. Clarifying needs and coordinating these initiatives may lead to a more efficient usage of climate funding.

The issue of funding must be further explored as it is crucial to maintaining trust between Parties. Morocco, the country hosting COP22, can legitimately carry this issue on behalf of developing countries. It is necessary to ensure that the commitments to provide public resources are kept and to study the impact of the lever effect on private funding so that, on top of the increased competitiveness of low-carbon solutions, climate funding helps excluding any high-carbon development plans.

3. Green Climate Fund, "GCF Encourages more high-quality and Ambitious Proposals" Bonn, 25 May 2016, available at: www.greenclimate.fund.

Sharing decarbonisation experiences and solutions

Lastly, though governments have proven themselves determined, one has to admit that many questions remain when it comes to how to conduct an orderly transition to a low carbon economy. Large research projects, such as the *Better Growth, Better Climate*⁴ report have demonstrated that climate action and economic development are complementary goals. What now remains to be done is to adjust emissions regulation tools in order to achieve rapid progress while maximizing co-benefits in terms of jobs or energy security, for instance. In sum, by making progress on the theoretical level, we can increase the chance of seeing more ambitious national contributions starting in 2018-2020.

While climate policies are less and less standardised, the multiplication of different experiences can teach us a lot. As the movement globalizes, it is possible to consider groupings of countries facing similar issues. For instance, the German region of North Rhine-Westphalia has embraced this rationale by launching in the spring of 2016 a platform for the energy transition in the industrial territories of Europe, North America and Australia. Its aim is to exchange experiences and identify the most promising ideas to respond to the very specific issue of the decarbonisation of heavy industries in the context of strong international competition. Such a dialogue should be opened between countries that produce fossil fuels and that are in the process of diversifying their economies, between developing countries who wish to directly aim for a low-carbon model or between countries with mature energy systems which need to plan the evolution of their infrastructures. Such groupings could even lead to sharing capabilities. The International Solar Energy Alliance also targets a specific category of developing countries which are located between the tropic of Cancer and the tropic of Capricorn and have extremely favourable sunlight conditions, but its aim extends beyond thinking about obstacles; it also must lead to innovative training initiatives and funding tools to reduce the capital cost of solar energy projects. One year after its launch it is still too soon to fully assess the effectiveness of this initiative though it already widens the scope of possibilities for international cooperation for climate protection.

4. Global Commission on the Economy and Climate, "Better Growth, Better Climate – Synthesis Report", September 2014.

Another great challenge is to foster the alignment of innovations. Technologies are advancing but they cannot be fully utilised unless legislation, business models and consumer habits change in their favour. Progress in recent years makes the idea of reasonable electricity storage costs realistic. However, the rules for the operation of electricity markets must be changed so that storage services would be valued, without distorting competition with other sources of flexibility. At the same time, consumers will need to take on a more active role to optimally combine renewable local production and individual storage, and the longstanding stakeholders of the centralised system will need to review their position to take this new energy deal into account. Beyond this one example, dialogue between countries engaging in the low-carbon transition can help ensure that all pieces of the decarbonisation puzzle fit together.

Conclusion

Closing with the announcement of an ambitious and balanced agreement, COP21 gave rise to great hope. Cooperation has been rekindled, and since all countries are committed to progressively bridging the gap between their first contributions and the efforts necessary to reach the targets of 2 or 1.5°C, why not believe them? And yet, there remains a risk that their enthusiasm may wane over time. In this new scheme, which mainly relies on voluntary contributions, the transition may prove too slow and inconsequential to avert major climate disruption. In order to rise to the expectations set during COP21, we must translate the Paris Agreement into action as quickly as possible.

In this respect, the initiatives of recent months seem to confirm governments' determination to honour their promises. There have been no major incidents of back-peddalling. The post-COP21 climate strategies combine carbon pricing and targeted measures, and aim for progress that is more politically acceptable and economically advantageous. The next step will be to accelerate these efforts by including them in a long-term transformation trajectory, by encouraging informed debates so that climate policies will remain stable after elections have taken place, and by orchestrating the sharing of experiences between regions that are facing similar issues. We must not deny the potential contradictions between climate protection initiatives and economic development, and we should seize upon the opportunity provided by this COP in Africa to explore new solutions for technology dissemination.

Economic stakeholders seem prepared for a shift towards low-carbon behaviours, though they do not believe that technological, legal and social innovations have yet perfectly aligned. In conclusion, the real challenge for COP22 will be to convince the world that, while COP21 did not bring about a new order of things, large-scale changes are underway at every level and the turning point can be reached by continually reinforcing climate policies and encouraging overall consistency.

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