28 April 2017

A summary of remarks

Session 1:The oil price

The subject was addressed in three parts. First, the nature of the OPEC's policy reversal. Second, the market reaction so far. Lastly, the statement that rebalancing and price recovery are unlikely.

To give some background, in 2016, there was an OPEC policy reversal from market share to a collaborative effort, both within the OPEC and between members and non-members, to rebalance an obviously oversupplied market. When you read OPEC literature, they systematically refer to the need to put an end to excess inventories. In April 2016, just before the Doha meeting, when the budget deficits were so large, there were signs that Saudi Arabia could no longer sustain the price war. Unfortunately, Doha was a complete disaster. We saw the policy-making framework to go beyond the oil ministry, deep into the center of power and politics, but that part of the framework was invisible. It is neither spoken about nor commented on, but that time, it arose with Prince Mohammed, who stepped in and really brought politics into the oil scene.

Then, there was the Algiers meeting. It was not planned, but in Algeria, they managed to come to an agreement, which paved the way for Vienna - both the OPEC agreement of 30 November to cut production by 1.2 million barrels per day to a ceiling of 32.5 million, and 10 days later, that of non-OPEC members to cut theirs by nearly 0.6 million barrels per day, with Russia taking half of that amount. These landmark deals are obviously complex because of both political and policy compromises and trade-offs, as well as the very first Saudi-Russia oil alliance, despite their political differences in the Middle East.

This time, neither Norway nor Mexico has joined the non-OPEC alliance, probably for political reasons. In Norway, conservatives are allied with a right-wing government. In addition, Norway, together with the European Union, was involved in sanctions against Russia. In Mexico, there is a technocracy, which was pushing for reform in the oil sector, liberalizing the industry. It is probable that the government did not want to endorse OPEC policies.

For the moment, just focusing on the inventory, there is a divergence between products and crude oil. Crude oil storage persists, well above the five-year average, while product inventory is dropping towards that average. The most significant impact of the cut is on the forward curve. The extreme contango we saw before November has flattened to some extent, and the whole curve has come down. We expect this to have an impact on inventory dynamics, but also on hedging by US shale producers.

As for the price, Brent Crude oil ranges between USD 50 and USD 56 per barrel, and WTI between USD 48 and USD 55 per barrel. This is apparently more than enough for a very elastic supply to react. It has particularly incentivized shale oil and the Permian in West Texas and East New Mexico. The production is booming again, and oil production throughout the US is recovering rapidly, with a peak in early 2017.

Rebalancing is still very much a work in progress, and even assuming that the decisions taken by members and non-members of the OPEC will be reaffirmed, it will hardly be complete by the end of the year. Consequently, we should not hold our breath for USD 70 or even USD 65 a barrel Brent price.

We moved then to a more precise evaluation of US shale oil production. After a detailed evaluation we concluded that the ability of the US industry to produce is overestimated due to logistical constraints. People do not understand that fracking requires a great deal of people and equipment, and if the equipment is not mobilized, the trained capacity is not booked. It will consequently take some time. There will be some increase in production, but much later than most people think.

We also discussed Russia's position. This is the first time that Russia has officially joined the OPEC in an effort to control the oil price. Russia agreed to take half of the non-OPEC supply, *i.e.* 300,000 barrels per day, but we have to bear in mind that the decision was made in December last year, when Russia was producing at the highest scale and drilling and production had been rising over the last seven years. It was at the highest level in December, so it was not that hard to cut production slightly, especially in January, when half of January was a holiday in Russia and obviously many companies were not producing at full capacity.

The tax regime is also very flexible. If the price dips to USD 25 a barrel, there is still a margin for companies to produce, especially small and medium enterprises. That is the case now. The government put pressure on the major oil companies, some of which are cutting their production, such as Rosneft and LUKOIL, but the small and medium enterprises are producing at full capacity. The government has put in a lot of effort to try to reduce the amount of production from small enterprises.

Joining the OPEC's deal is currently a very important political move for Russia, because the presidential elections are to take place in March 2018, so everything should be done to keep the price at USD 50 until April 2018 or so. For example, next year's budget is calculated at USD 40 per barrel. If the oil price is USD 40, oil and gas revenues will represent 38% of the state's budget. If the price is USD 50, oil and gas revenues will represent 50% of the budget, which is very significant for Russia. It looks like the deal will be extended. It is hard to estimate the actual reduction for major companies such as Gazprom and Rosneft. Rosneft is producing 93 billion tonnes a year in the Arctic, which is almost one fifth of the entire Russian production, and Arctic costs are very high.

The short-term forecast is that if the deal is extended, then production will be flat - almost the same as last year, so perhaps 549 million tonnes. If not, it will be slightly higher, but we expect that with the average range of USD 40 to USD 50 a barrel, production will be flat for maybe three to five years.

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Looking at the United States, the idea of the border adjustment tax (BAT) has been discussed, and although it is true that in the last few days it appears to have lost favour and will not be included in the coming tax package it must be taken seriously. That is because the coming tax package includes many tax reduction measures and does nothing to compensate for that. The US has not been able to achieve the expected savings from the Obamacare repeal, and so is facing an even steeper, worse budget deficit than was expected.

Regarding the tax package, it is almost inevitable that confidence in the dollar will be affected by this increased deficit. Inflation will be expected to increase, and this, of course, will also have a consequence on the interest rate. In conclusion, the BAT is not dead and nor is it a stupid idea. It stems from academia and is meant to compensate for the fact that the US does not have value-added tax (VAT). The BAT is thus meant to compensate for the absence of VAT. In countries with VAT, companies pay VAT when they purchase goods, but if they export, they are compensated, *i.e.* their VAT payments are refunded. When you import something from the rest of the world, VAT is charged on those imports. In a way, although VAT is not a trade tax, a tax on imports or a subsidy on exports it has the effect of protecting domestic production and domestic value added.

In the context of the US, the absence of VAT is considered to be one of the ways in which the trade partners of the US are taking advantage of it, and therefore has to be compensated. The BAT is basically a change in the tax rules, and more precisely, in the accounting rules for income tax. It has not much to do with the border or trade *per se*. It

simply means that companies will not be allowed to deduct imports as costs and inversely, they will no longer have to consider exports as part of their revenue. If you export everything, you go to the taxman and report: 'I have no revenue because all of my revenue comes from abroad. Therefore, I pay zero taxes'. If you are entirely dependent on imports, then you are forced to say: 'I have no costs. All of my income is profit and I have to pay taxes on my entire income'. The effect is very clear. Most companies have some imports and maybe some exports, but when they import, they will not be able to deduct that from their net revenue and inversely, when they have exports, the revenue from exports is not considered part of their revenue.

In terms of oil, because the US remains a major importer, it means that if you are a refinery and you import some of your oil, you will not be able to deduct that from your costs and you will have to consider whatever you have spent on importing oil as part of your net income. If you export some of your product, you will instead be able to say that this is not part of your taxable income. For refineries that normally work on fairly tight margins, this is something that has a fairly devastating effect. It strongly forces refiners to purchase domestically.

Obviously, this would mean an increase in demand for domestic oil, a decrease in demand for imported oil and therefore some effect on the relative prices, which, although not easy to evaluate, I think would be quite significant. The idea is that this would be accompanied by a 20% reduction of income tax. Now, from what we hear, the reduction would amount to 15%, and that means that it is basically like having a 20% or 15% tax on imports. It would change the US oil market and the US refinery industry quite significantly. However, that will not be tomorrow, as there is resistance.

It should be noted that the BAT does not exclusively target the oil industry. The measure would affect the entire economy, so it could not be presented as a tool specifically geared to the oil industry, although oil imports are an important share of total imports and that is, in fact, where the major impact would be felt. The second important point is that it has significant support in the House. Although the Republican Senate and the Conservatives are opposed to it, it has the support of the most conservative part of the Republican party. There are many enterprises and industries that would gain from the BAT.

Regarding the new president's energy policy, it is focused on America First. The idea is that if you remove all of the restrictions on the oil and gas industry and on the coal industry to allow many more leases of federal lands to the oil and gas industry, then that will result in a significantly higher production of oil and gas and reinject some new life into the coal industry. However, most people believe coal revival is not going to happen because there are currently such massive volumes of low-cost gas, and many states have issued policies on moving towards renewable forms of energy. Coal is thus highly unlikely to come back. In the power sector, we will have renewables supplemented by gas, and that is unlikely to change.

Among the new leaders is Mr Perry, Governor of Texas, who has been nominated Secretary of the Department of Energy. He knows little about our industry and has recognised that. In fact, when he was running with his fellow Republican candidate for the pre-elections, he said the first thing he wanted to do was abolish the Department of Energy. He has now been put in charge of it. The main task of the Department of Energy is handling nuclear weapons. In other words, they oversee all the labs that make nuclear weapons, and two thirds of their budget go towards that. They can implement energy policies, but the matters that are actually of concern to the oil and gas industry are determined by the Environmental Protection Agency (EPA), which is run by Scott Pruitt, its administrator. His previous position was strongly in favour of the industry. He basically wanted to have no restrictions and no regulations on pollutants wherever possible. He is now in the position to actually initiate and implement policies the industry wants.

Mr Ryan Zinke, the Secretary of the Interior, is another strong supporter of the industry. He will make every effort to lease as many lands as possible. In fact, the idea is now to take some of the massive areas that Mr Obama set aside for conservation and open them to the industry so it can look for oil and gas. The new EPA is currently working on destroying Obama's Clean Power Plan, developed to enforce the fight against climate

change by reducing the use of coal in power plants. The use of coal went down from about 50% ten years ago to about 10% of power production today, and is still decreasing. Many of the old plants are closed, and nobody is building new coal-fired power plants. The new administration wants to reverse this and allow coal to make a comeback. I do not think that will happen, because the economics are not good, and people know that if you were to build a new coal-fired power plant under new regulations, they could change again in four to eight years.

The other characteristic of the new policy is to put everything on an equal footing so that the fossil fuel industry can compete with wind and solar power: in other words, without subsidies for the renewables. At the same time, you have to remove the tax advantages for oil and gas. The key point of the new program is to increase production on federal lands. It will take time because much of it is offshore. The best prospects for tight (shale) oil and tight (shale) gas have been on state-owned lands and not on federal lands. The federal government cannot touch it.

The renewables will have to compete on an equal footing and are unlikely to get the subsidies they have received in the past. Interestingly, we will see this for electric vehicles (EVs). If you buy an EV today, you get both a federal tax cut and a state tax cut, particularly in California. The federal tax cut may be abolished. Ethanol will be under close scrutiny, because some argue that a million barrels a day of ethanol that is produced as an oxygenate to be added to gasoline is supported by the agricultural state, but strongly opposed by others as a boondoggle, a giveaway for the agricultural industry. In some way, they are correct, because the environmental impact of all this additional corn production has been quite serious. You have massive run-off into the rivers that ends up in the Gulf of Mexico, with complete dead zones as a result of that form of pollution.

Session 2 :The “new” energy mix

The development of renewable energies today and tomorrow is, of course, critical. It should be noted that we have seen a massive drop in photovoltaic (PV) and wind prices over the last ten years, and also a significant increase of annual capacity. The cost of PV in the past few years has been reduced by 80% and the cost of onshore wind by 40%. In terms of capacity development and billions of dollars of investments, variable renewable energies and non-variable renewable energies, including hydro and biomass, have been quite significant, especially in the past two or three years. Since 2015, more than half of the new power capacity in the world has been related to renewables.

We have to make a precise distinction between non-variable renewables: hydro and biomass, and variable renewables: wind and solar. We also have to take into account that PV and wind power only operate between 1,000 hours and 3,000 hours per year, but hydro and biomass can operate much longer. We have around 22% of electricity coming from renewables, but 18% comes from hydro and biomass and only 4% from wind and PV, even with very significant growth over the past few years.

When we look to the future, it is very interesting to see the figures in the International Energy Agency’s (IEA) new policy scenario, which estimates that 36% of electricity in total will be produced by all renewables, and 15% by PV and wind. Of course, the increase from 4% to 15% is quite significant, but this is only part of what we have to do. This means that we have to continue to work on hydro, biomass and gas turbines, as well as combined-cycle gas turbines (CCGTs), and think about carbon capture and storage (CCS), coal and nuclear power. These are still complementary pathways for achieving some of the objectives for competitive electricity without too much CO^2.

We should also keep in mind the fact that in France, we have built 58 nuclear plants, which we operate and which produce electricity at a cost of between EUR 45 and EUR 50 per megawatt hour. We used US Westinghouse technology. At the same time, the US built the same kind of nuclear plants for two or three times the cost of ours here in France. That was not because we were cleverer, of course. The Americans were cleverer than we were regarding nuclear power, particularly at that time. It was simply because we had the ability to standardize the quality of the industrial fabric and to finalize the basic design, without making any modifications during the plants’ construction of.

You have conditions for success and conditions for failure with all these kinds of technology, mainly for nuclear related to these industrial competences. For renewables, you also have conditions for success and failure. Of course, if you have two or three times more solar power, which is the case if you compare California and even Chile or Dubai to Paris or Frankfurt, the price will be two or three times greater in Paris and Frankfurt than in California. Producing solar power is much more attractive if you have a strong correlation between solar and electrical demand, which is the case when you have air conditioning, which is necessary during hot (sunny) hours. The storage issue is much less significant in these countries, and the value of producing a kilowatt hour using solar power is very good in the electricity system because it is useful even at peak times, which is not the case in Paris, when you see that the extreme peak is between six o'clock and eight o'clock in the evening during winter when there is no sun. That naturally means that you have a factor between one and five or six regarding the cost of producing a kilowatt hour using PV in tropical countries or California and in Paris or Frankfurt.

Clearly, PV and wind power are competitive today when you do not have too much capacity and when you are in the US, California, Chile or Dubai. On the contrary, maturity and competitiveness are far less clear in other regions, particularly in Central Europe. The paradox is that we have huge renewable capacities in countries where the conditions are not very favourable. For instance, in the US, you have very good resources in terms of wind power. On average, wind power In the US today is available 3,000 hours a year, but in Europe it is only available between 500 and 2,000 hours a year, despite the fact that in California, they have on average twice the amount of sun that we have in Europe. However, we currently have exactly the opposite in terms of deployment. In the US, you have only 5% of electricity coming from PV and wind. We already have 11% in Europe.

There may be a serious issue regarding the value of the marginal kilowatt hours. For instance, in Germany, they currently have around 40 gigawatts of installed capacity of PV, which makes up only 5% to 6% of the annual electricity generation. Of course, it is concentrated, particularly during the summer, when the average demand in terms of capacity is around 40 gigawatts. When they introduce a further 10 or 15 gigawatts, they will absolutely have to be able to store the kilowatt hour. If not, it will have zero value, because they do not need the additional hours at that time.

That is just an illustration of the kind of issues we could have. Of course, it is completely different if you are in Dubai or a tropical region with air conditioning, as mentioned above. If peak demand is at exactly the time you see a kilowatt hour coming in from PV, you can develop and install a very significant capacity and achieve 20%, 30% or 40% of the total annual electrical demand.

In some regions in the world, we definitely have to make a breakthrough in storage. We need day and night storage. Lithium-ion batteries could help, but you have to bear in mind that in electric vehicles today, at full capacity, the battery is emptied after only one hour. We need to have batteries and storage in the range of four to six hours to be able to transfer from day to night. In European countries where we have, for example, three days of wind, then three days without wind, we need to have storage with a time constraint of 100 hours. As we have a summer and a winter, we also need storage with a 1,000 to 2,000-hour timescale. Of course, even the most optimistic of people would conclude that batteries will not achieve that over the next 50 years, so we have to shift to hydrogen, and this is really the R&D roadmap we need to achieve some results. Just bear in mind that if we only introduce a day and night lithium-ion battery, with the costs we have today - even those of Tesla, which are lower than others - we have to add something like EUR 100 per megawatt hour to the cost of PV, and if we need longer storage, this is much costlier. Again, that is an issue to bear in mind.

Regarding the 21st session of the Conference of the Parties (COP21), the bottom-up approach that we adopted in Paris was probably the right one. But we must look at ways of decarbonizing the energy system. We must implement quickly so that we learn a lot, because we are very far from achieving the 2°C or 3°C objectives by the end of the century. Clearly, people are forgetting some basic results from the Intergovernmental Panel on Climate Change (IPCC), which are that to achieve 2°C, the electricity sector must be completely without CO^2 by 2040, for example, and we have to have net negative emissions

by 2060 or 2070. Since we do not have other possibilities on the table, this means that we must massively develop biomass with CCS. This is to say that the distance between words and reality is very significant. On the one hand, we need a technology roadmap - not only renewables and storage, but also nuclear, CCS, hydro, for which there is significant potential in Asia and Africa - and, on the other, the ability to quickly implement the Paris Agreement. In terms of the review process, the Measurement, Reporting and Verifications (MRV) procedures will be key. That is not completely the case yet, and when we see the COP 22, which launched the procedures, we may be very impressed by the way people seem to have advanced,

We then had a look at the World Energy Outlook New Policies Scenario. This is basically assuming the robust implementation of the Intended Nationally Determined Contributions (INDCs) decided during the Paris Convention. There is nothing guaranteed, but even with the implementation of the INDCs, we are far from the 2°C scenario. If countries are genuinely serious about meeting the 2°C objective, then coal and oil have to decline significantly, gas probably has to stay flat and renewables have to increase. We are quite optimistic about the future of renewables, but we are only talking about renewables in the power generation sector. If we really are to see a very strong growth in renewables, then these must also be used for heating, including industrial heating. This is a daunting task, and there is a gap between what is happening right now and what is needed in the future…

Regarding oil demand, one of our scenarios forecasts the decline in diesel use for passenger vehicles, and this is partly due to EV. In this scenario, we anticipate about 150 million EVs worldwide, but that would only reduce oil demand by 1.3 millions of barrels per day to one million barrel per day. A large part of the decline is due to efficiency improvements. In the 450 parts per million scenario, we expect 700 million electric vehicles worldwide, but again, that only displaces 6 millions of barrels per day of oil demand.

It is evidently a lot more difficult to displace oil in aviation, freight or the petrochemical sectors. If we are seriously to decarbonize and bring down CO^2 emissions from the transportation sector, we need a fundamental change in how people live.

The most controversial issue is coal, and so we could expect that coal demand will somewhat decrease in advanced countries such as the US, the countries of the European Union and even China towards 2040. On the other hand, of course, India and Southeast Asia will grow. What will happen to the US? Mr Trump made many promises to coalminers in West Virginia and other places, but so far, what has happened in the US in terms of switching from coal to gas, which contributed to CO^2 reduction, was not the result of any policy. That was driven by the market. The fundamental economic case for building coal power plants has not changed. Do not expect any substantial change in terms of coal demand.

However, if we take a look at what is happening in the coal market, there was actually a drastic change last year. If you compare the beginning of 2016 to the end of 2016, coal prices almost doubled and metallurgical coal prices tripled. This happened because of Chinese policy. China decided to reduce the number of hours for workers in coal mines, and then coal prices suddenly doubled in one year. As well as the impact of the Chinese policies, there was the flood in Australia, which gave the US and other coal industries a respite, but we do not think that these kinds of policies will substantially change the fundamental requirements for coal demand in those countries, including the US. We evidently expect substantial growth in coal demand in India or Asian countries, and there are many uncertainties in regard to that. We see that India or other countries are trying to adopt greener, more renewable systems, but there are various challenges, not only in technical terms, but also in policy designs.

We have seen very rapid, substantial growth in renewables. A country like Denmark, which is at the top, has a very high penetration. This calls for new power market designs for these countries and various policy changes. For instance, in the case of Denmark, with their massive amount of wind power generation, they are already exporting a lot of unwanted electricity to neighbouring countries because their flexible power generation cannot take care of all those requirements. Why? Because they have built such efficient

coal generation power plants, both generating electricity and heating, so automatically there are limits to the flexibility the power plants can require. We heard just two or three days ago that Denmark is planning to build another 2-gigawatt offshore and onshore wind power generation capacity, so that means that they have decided to move away from combined heat and power (CHP), and may need to heat the building with electricity-based heat pumps.

This is a fundamental change. There are also changes in the electricity market design, because we have to take into account the massive growth of our renewable generation. They are becoming cost-competitive and they are currently still supported by various policy measures, but the current electricity market design is not good enough to reward flexibility or dispatchability. We need better systems to evaluate the value of generation sources in the entire system. Very creative innovation is needed in market designs and power policies in various countries.

We often use what we call the rainbow chart, and we often say that renewables are growing very rapidly and are on track. There are many challenges ahead, but we should not forget that technologies such as nuclear or even CCS will also be needed to meet the 2°C objective.

We should remember that in the IEA's 450 part per million scenario, oil demand will decline towards 2030 and 2040. There could be a rather substantial decline, but the point that we need to be aware of is that depletion from the existing fields is actually faster than the demand decline, even in the case of the 2°C scenario

We moved to digitalization in the power system. We live in a time of great uncertainty. Nobody is able to say what the power landscape will look like a couple of years from now. For example, we have 100,000 kilometers of power lines and our objective right now is to optimize these existing lines and avoid building more lines, because it is more and more difficult.

The economics of the power system is moving very fast, and many actors are not making decisions based on economic criteria. Some people are going to invest in Tesla, even though it is far more expensive than a classic car. Others are going to invest in PV. Some local decision-makers are going to push for renewable policy development and so on, and the best and most economical solution is to rely on the network to mutualize the different productions.

Right now, the major issue for transmission system operators is to convince the decision-makers and the regulators that we have no incentive to invest in smart solutions that are also software solutions. The tariff is calculated on the basis of infrastructures on the lines and there is no incentive to develop market design, even though some companies are doing it; not because they have an incentive to do so, but because they are convinced that it needs to be done.

We also have an issue regarding capacity versus energy, and so we developed some capacity markets. We increasingly need the grid to be able to move power flow at certain times. That will be the landscape, and as an example of a couple of solutions that we can achieve with digitalization, it is very significant in terms of increasing the amount of energy on the grid. For example, if you look at what we are able to do today in a smart substation, if you know real-time weather data, we can increase the capacity in the lines by up to 30%, maybe more, without adding any more lines. It is very interesting to realize that with what we have today, it is not so simple, but basically we do not need to invest in more transmission lines to transmit more power, especially if it is power from wind power stations.

If you look, for example, at market design solutions, a company implemented a flow-based solution to calculate the capacities on the network. It is just a new way to calculate the capacity between a couple of countries without changing anything. The big difference is that the extra we have, country by country, is put in a common pool and you calculate what you could do. By doing this, we have been able to increase the amount of electricity going through the network by 30%.

Another example is the use of storage. This is sometimes very difficult to explain, because when you store, you need to produce at some point. It is possible to store at some point in France and to produce at the same time in another place in France. This way, it is totally transparent for the market. The same amount of electricity coming in will go out, so nobody will see anything, and for us, it is just to transport energy from one point to another. This is exactly the job that we are supposed to do.

All these kinds of issues are very important, and so if you look at today's grid and the data for today, you can see the hybrid grid for tomorrow. You will see that we have plenty of opportunities to exchange data. For example, if you look at the future, the link between operation and asset management is a very important issue for us, because all discussions at a European level are trying to push forward the model where you should, in fact, separate the operation of the network and asset management. It is actually going backwards, because with digitalization, it is very important that you know exactly the state of your asset management. You know exactly how much you can push it, how much you can use it.

If you separate the two entities, you lose the opportunity to optimize the use of the network because at some point, at the dispatching, somebody will say: 'I have a problem here. I need to use this line.' I know for a fact that using this line, I could be going over the security indicators and so on, but if you have to call another company to ask for their authorization to do that, it is not possible. You lose some opportunities to optimize the system.

To conclude, yesterday we had a line from generators through the grid towards end users and today, you have more and more actors. A lot of people are able to create value. All the stakeholders can create value today. You can use flexibility from the generators, from the end users, from the industrial customers, but there is no place to discuss how we must break the silo and be able to put together the data. We need a kind of regulation. We need a strategy for digitalization at the European level.

Session 3 : The future of transportation

We started with an analysis of the impact of the development of electric vehicles on petroleum consumption.

We looked at an estimation of the decline of oil consumption by 2040 for four scenarios. As you can see, there are very important differences. BP and the IEA estimate the impact at around 1 million barrels a day. Bloomberg plans a greater decline of 13 million barrels a day. The IEA's 2°C scenario forecasts a decline of 6 million barrels a day. The gap is, of course, due to the future development of the electric vehicle fleet, but it is not the only reason. It is also linked to the different assumptions.

With regards to the stock of vehicles, there are clear differences. There are 100 to 150 million electric vehicles for BP and the IEA, around 400 million vehicles for Bloomberg, and 700 million for the 2°C scenario. To try to measure the credibility of this scenario, we have compared the annual sales of electric vehicles to total sales. It is obviously not possible to conclude with certainty on this subject. The actual outcome will depend on regulation and the electric solution's level of competitiveness. What can be said is that for the IEA and Bloomberg scenarios, the market share does not appear to be excessive, standing at 8% to 35% of the total market. The 2°C scenario seems less realistic, at 90% market share

It can therefore be considered that there are only two possible scenarios. Beyond the number of electric vehicles, the assumptions adopted are also behind the differences. To verify this, we have done the calculation using the same assumption for 2040 using two main parameters, the annual distance and the unit consumption. The calculation shows a divergence for Bloomberg due to the fact that Bloomberg considers a much higher distance, close to the US standard. The unit consumption used is also higher. This explains the differences from other scenarios. From my perspective, the Bloomberg vision seems excessive.

How will the fleet of vehicles evolve over time? The overall projection is for 2 billion vehicles in 2040, which is twice today's number. We can compare the Bloomberg scenario and the top IEA scenario for old and new fleets and electric vehicles. We can see that electric vehicles play a role, especially at the end of the period. This means that reducing oil consumption quickly will require other measures, in particular, a rapid renewal of the old fleet and a rapid reduction of the unit consumption of new vehicles.

To conclude, firstly for the scenarios that appear credible, the decline in oil consumption is estimated at between 1 and 13 million barrels a day. The reason for this difference is the EV stock. A likely scenario is that the impact of EV on oil consumption is estimated at between 1 to 5 million barrels a day. This is significant, but we are far from the Bloomberg position. Finally, we need to measure the old and new fleets. Electric vehicles are only part of the solution to reduce oil consumption.