

## ARNAUD BREUILLAC

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I am going to start with my presentation on energy. Energy is at the heart of the fight against climate change and promotion of sustainable development. Energy is fundamental to human life. Energy is central to all of our activities, from making food, heat, light and transport. Supplying energy means contributing to the economic and social development and the well-being of all people on the planet. Energy is also at the heart of one of the greatest challenges of the 21st Century, saving the planet from the threat of climate change, while enabling humanity to escape poverty.

Climate change is a reality and all society need to be part of the response, that is to say industry, policymakers, or government and also consumers.

The energy and climate challenge are inseparable from other major world challenges, such as poverty, hunger, environmental degradation, biodiversity loss, preservation of water, ethics and corruption. The *UN sustainable development goals* have set a path to the responsible creation of a better future that is more sustainable for everyone. It is not enough to decarbonize energy. It is also necessary to meet the growing energy needs of a rising global population in a responsible way. That is the dual challenge for energy.

There are 7.6 billion people in the world and more than 1 billion people do not have access to energy today. In 2050, there should be approximately 10 billion on the planet. This demographic growth and the improvement of living standards will require energy that is reliable, affordable, clean and accessible to as many people as possible. This means reinventing energy. GDP and energy use are linked, therefore linking both to the climate challenge. Demography is a very predictable science in terms of numbers. We know that the world population will grow and therefore the need for energy is also going to grow. A growing population means growth in GDP, higher energy use and higher greenhouse gas emissions.

Reinventing energy means promoting renewable decarbonized energies, including solar, wind power, biofuels, biogas and hydrogen.

Reinventing energy also means reducing the emissions generated by the production of fossil energies and storing the residual carbon.

Reinventing energy means that the market will have to change the way we use energy, focusing on energy efficiency and preferring renewable or decarbonized energies.

Reinventing energy concerns all of society, governments, investors, business and consumers. All of them have a role to play.

Last Tuesday, TotalEnergies presented a new energy outlook. We do this every year. In this new energy outlook, we have essentially two scenarios looking towards 2050. They are called momentum and rupture. Both of them assume 3% growth per year of GDP, but the associated growth of energy demand is not the same. In the momentum scenario, we assume that the growth of energy demand will only be 0.5% per year. That implies that there is a lot of energy optimization in terms of the way we use energy. For rupture it is even less. It is only 0.3% per year in the rupture scenario.

The momentum scenario assumes that all of the net-zero 2050 countries, countries that have made commitments under the agreement to be net-zero by 2050, will deliver on their commitments, and that China will be on track to achieve carbon neutrality by 2060. Under that scenario, the temperature will still rise by 2.2 to 2.4 degrees by the end of the century. If you translate this scenario into concrete policy measures, it means that by 2035 the net-zero 2050 countries will no longer have thermal engines, so all vehicles will be running on electricity. It is a very strong underlying hypothesis, just to take one of them.

In the second one, the rupture scenario, it is even more disruptive. To get to that level, we need all of the non-net-zero countries to drastically change their policies so that they are more or less in line with the net-zero 2050 countries. It also implies some significant technological breakthroughs in terms of the way we use energy and energy efficiencies, and I would say globally a rebuilding of the energy systems. In that scenario, from our simulation, the temperature increase would be less than 2 degrees, but would still be above the 1.5 degrees that is the target of many policymakers. We cannot say for sure what will happen, but we make projections to help formulate policies.

I would like to show you in a simplistic way the path to transforming energy, which I believe is important for you to understand and to open the debate about the levers we have as an industry to transform this energy industry. First, we need to acknowledge the fact that in all scenarios more energy will be needed in the future. We also see that oil demand will plateau sometime after 2030 and then will decline. Gas is an enabler of the energy transition, both in power and in industry. Development of greener liquid and gas as fuel is going to be an important contributor, as will radical electrification with storage capabilities. Renewable decarbonizing of the power sector will be important, namely massive generation of electricity using wind and solar power. Hydrogen is increasingly penetrating industry and transportation. Last and but not least, are carbon sinks. This is what we call carbon capture and storage, including natural-based solutions. Carbon sinks will help to mitigate the carbon emissions that cannot be avoided. In a simplistic way, that is our vision of the pathway to the energy transition.

If we do all of this, in terms of the evolution of the primary energy demand in 2050 compared to 2019 in the two scenarios we have laid out, the contributing role of net-zero 2050 countries is that they will reduce their energy consumption over that period while growing their economies. That means there is an underlying hypothesis of very good energy efficiency. However, in the rest of the world there will be a different scenario depending on how much energy they will need for the future between the momentum and rupture scenarios. What is important to note is that energy demand will change significantly by 2050, but under both scenarios, momentum and rupture, which are already themselves not simple scenarios to

realize, with growth in natural gas. In the momentum scenario fossil energy will continue to supply more than 50% of the primary energy demand and coal will almost disappear in the rupture scenario. Solar and wind of course are growing very significantly.

I will not dwell further on this energy outlook. However, the key takeaways are that, first, energy transition implies a major shift in the energy mix and the use of energy; second, fossil fuels are still required, as is nuclear; and third, there are underlying cost implications in terms of the cost of energy for this transition, which we want to be a just transition. How do we share the cost of this decarbonized energy? That is one of the main challenges of the COP26 that is going to take place next month.

I would like to share with you the way TotalEnergies, as one of the major actors of course in the field of energy, has the ambition to be the company of responsible energy. Energy represents the history of Total as a company, but also the future of TotalEnergies – we changed our name in May– is to continue to be a major energy player tomorrow, as we are today. We support the goal of the 2015 Paris agreement, which calls for reducing greenhouse gas in the context of sustainable development and the fight against poverty and which aims to limit the increase of the global temperature below 2 degrees Celsius compared to preindustrial levels.

TotalEnergies declared its ambition to get to net-zero across its production and energy products. That is scope one, two and three for those who are familiar with this jargon, so used by its customers by 2050, together with society. It is important to say together with society because, again, it is not just TotalEnergies that defines which products are being consumed. TotalEnergies has embedded the changing energy mix into its strategy by investing in renewables and electricity, favoring the use of natural gas in addition to hydrogen and biomass, targeting investments in low-cost oil and biofuels and by developing natural-based carbon storage solutions, as well as CO<sub>2</sub> capture and sequestration. This ambition means profitable investment in order to be one of the top five producers of renewable energy, to make renewable energy a profitable business; deployment across the entire electricity value chain from production to the end-user – this also involves storage and trading – to have a responsible approach on fossil energies, focusing on value by selecting low-cost developments that are the most efficient in terms of greenhouse gas emissions, also producing more green gases and green fuels. We believe that there is a lot to do in this region in particular, and this is why we are developing a lot of projects in Abu Dhabi and in the wider region.

We want to reach the top three in low-carbon LNG. We want to become a leader in the mass production of clean hydrogen using a similar model to the one we used for LNG, so it is massive production of clean hydrogen, the challenge here being of course that today there are not a lot of customers. There is not a lot of use of hydrogen, so we need to develop that market as well. We want to become a partner of our customers in the carbon-neutrality journey. We want to be an important actor of electrical mobility, as we are today in the distribution of fuel. This is in regard to the petrol station network. We are promoting circular economy in the use of plastics, developing carbon storage and we are a recognized leader in sustainable development. All of this is linked together, so the decade of 2020 to 2030 will see

TotalEnergies transform itself into a true broad energy company. TotalEnergies projected production and sales mix will change significantly by 2030.

Just to give you some rough figures, TotalEnergies today produces 50% oil and 50% gas, 3 million barrels of oil equivalent per day. By 2030, 10 years from now, we shall be producing 4 million barrels of oil equivalent per day, so that is a 30% increase, responding to the growing energy demand, but with a different mix, because 50% will come from green gases, 35% will come from oil and liquid biofuels and 15% will come from electricity, mostly from renewables. This is actually a growth of energy proposal, but of course with a very different mix, in line with the scenario that we have presented and also in line with the objective of the 2050 net-zero target.

We are investing approximately half of our USD 13 billion to USD 15 billion annual capital budget into low-carbon energies. TotalEnergies is committed to the sustainable development goal of the UN with four main axes including sustainable energy, which means leading the transformation of the energy model to combat climate change and respond to the needs of people. TotalEnergies is committed to the wellbeing of people, being a leading name as an employer and a responsible operator; environmental excellence, which means being exemplary in terms of environmental management and the most efficient use of planet's natural resources; creating value for society, generating shared prosperity across regions, creating positive changes for communities and in host regions where we produce energy. TotalEnergies recognizes the positive role of permanent commitment and open dialogue with investors and also other economic actors, like governments, society and NGOs. TotalEnergies reports in line with the sustainability accounting standard boards and supports the World Economic Forum initiative advocating shared ESG indicators for all companies. Each year TotalEnergies publishes a climate report with detailing how we are progressing towards our targets. It is transparent reporting on the commitment we have made.

In conclusion, let me tell you that I have spent 40 years with the Company, and I am very passionate about the ongoing transformation of the company and our contribution to responding to one of the greatest challenges of our century. Thank you.