Aquila Capital

RACE TO NET ZERO
COMBINING THE GOOD WITH THE USEFUL

Abstract

While the climate crisis was largely pushed into the background during the pandemic, it is now the focus of international financial programs to stimulate the economy. In addition to the pressing problems of climate change, the majority of governments agree that the energy transition has a disproportionately positive impact on the labour market, competitiveness and thus on the real economy as a whole. To date 90% of the global financial framework earmarked for green investments is accounted for by the EU and national programmes of the member states. However, the commitment of other countries is accelerating, with many more countries announcing stricter targets during the US-initiated Leaders Summit on Climate in April 2021. The announcements of the new US President Joe Biden, who is leading the USA back into the Paris Climate Agreement, are particularly positive.

At the centre of all efforts is the demand for private capital. The example of the EU shows how much capital is required to achieve the ambitious goals. The efficiency of state reconstruction programmes will be measured by the attraction of private investors.

Renewable energies and energy efficiency are the most important pillars of the decarbonisation of national economies. Together, they offer the potential to avoid 90% of the required global reduction in GHG emissions to meet the 2°C target. Moreover, the technologies are already highly competitive. In terms of new construction, they already have negative substitution costs in most regions around the world.

But why are these developments not yet reflected in the speed of the energy transition?

The fluctuating production of renewable energy – as it is weather-dependent – requires an adjustment of the entire energy system due to the limited scalability compared to conventional power plants. And this is where the potential for achieving the goals lies. If state financial frameworks are used efficiently to increase integration, stable framework conditions are provided that reduce the risk for private investors and thus create the basic prerequisite for the energy transition. Innovations that increase the flexibility of demand and supply are the key to new economic growth potential.

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1. A green economic stimulus package

The "Green Deal", which the European Union already announced in 2019, sets new standards with regard to the goal of avoiding climate-damaging activities. The target of becoming the world's first climate-neutral continent by 2050 is extremely ambitious technically, economically, as well as financially. While the global pioneering role as a first-mover carries risks, the number of countries following this approach is increasing, because incentives do not arise solely from the desire to accept the need for change and to act accordingly. The prospects for emerging growth impulses through a green revolution are more important than ever in the current state of the global economy.

The crisis caused by the pandemic, and in particular the restrictions it necessitates, sets new standards in terms of negative economic ramifications.

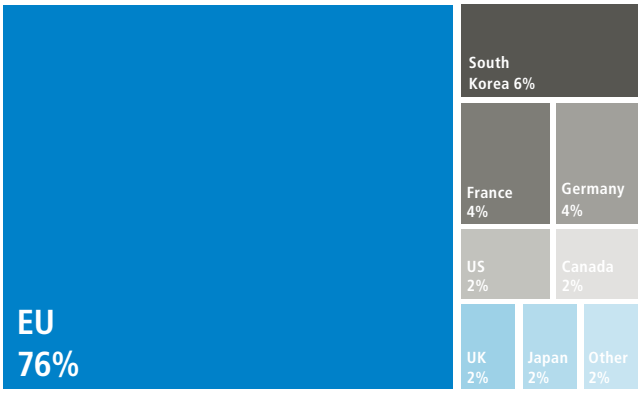
"The COVID-19 pandemic has triggered the deepest economic recession in nearly a century, threatening health, disrupting economic activity, and hurting well-being and jobs. Extraordinary policies are required to walk the tightrope towards recovery, which will shape the economic and social prospects of the coming decade". (OECD 2021)

Nevertheless, it can be observed that the current situation does not exclusively present our society with new challenges, but also acts as a catalyst to accelerate already existing trends. In addition to a further drastic shift in trade towards e-commerce and the resulting growing logistical challenges, the competitive factor of digitalisation is also taking on an even greater significance. The impact of the crisis falls in the midst of a global green and digital transformation. Does this also result in a turning point for energy supply?

Already at the beginning of the pandemic, the calls under the leadership of the Green Recovery Alliance became increasingly louder to focus economic efforts and a financial stimulus on the establishment of new green standards. In response to the stimulus, the EU put together a package of measures that was historic on this scale, with a financial framework of over €1.8 trillion. In addition, the 2030 emissions targets were raised to a new level. The reduction targets were increased by 15 pps to the current 55% and the targets for the share of renewable electricity production were raised to 65% within this framework.

30% of the financial envelope, amounting to €547 billion, is to be invested exclusively in green projects, while the remaining 70% are subject to do-not-harm regulation. In Europe, there is also additional support through national recovery programmes, which also follow the green recovery strategy. Currently, the EU is responsible for more than three quarters of the global green stimuli. When added to the national budgets of Germany, France and other member states as well as the UK, the share amounts to about 90% worldwide. However, the incentives resulting from the growth prospects and especially the disproportionately positive effects on the labour market will be followed by other countries. Worldwide, stimulus packages for the consequences of the pandemic have been approved to date $14 trillion but only 7% of it are explicitly earmarked for green investments further 8% are even targeting CO2 intensive sectors.

Figure 1: Green Stimulus approved to date



Noticeable progress was made in setting international goals during the Leaders Summit on Climate initiated by the USA. The reorientation of the USA is also particularly positive, with its new President Joe Biden leading it back into the Paris Climate Agreement and putting the focus back on reducing emissions. In particular, it became clear that many countries significantly strengthened the short-term targets, i.e. until 2030, which can be seen as a response to the economic crisis. There is broad agreement that investments in the energy transition have positive effects on the real economy. In this context, it makes sense to link economic stimulus packages aimed at increasing government spending with the high investment needs for climate efforts.

The following countries announced new targets or a target increase at the conference:[1]

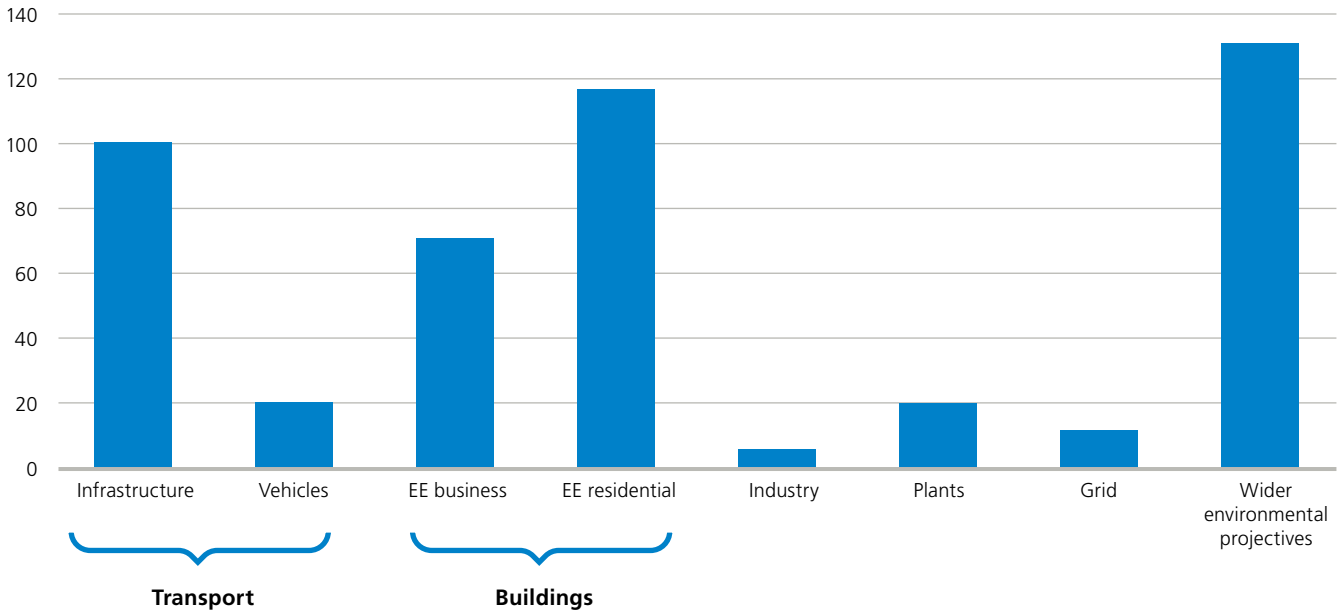
- USA will halve their emissions compared to 2005 by 2030. President Joe Biden announced to invest hundreds of billions of dollars in the transition of the US-economy which is in clear contrast to its predecessor Donald Trump.
- Japan will cut emissions 46-50% below 2013 levels by 2030, with strong efforts toward achieving a 50% reduction. This marks a significant acceleration from its existing 26% reduction goal.
- Canada will strengthen its NDC to a 40-45% reduction from 2005 levels by 2030, a significant increase over its previous target to reduce emissions 30% below 2005 levels by 2030.
- India reiterated its target of 450 GW of renewable energy by 2030 and announced the launch of the "U.S.-India 2030 Climate and Clean Energy Agenda 2030 Partnership" to mobilize finance and speed clean energy innovation and deployment this decade.
- Argentina will strengthen its NDC, deploy more renewables, reduce methane emissions, and end illegal deforestation.
- The United Kingdom will embed in law a 78% GHG reduction below 1990 levels by 2035.
- The European Union is putting into law a target of reducing net greenhouse gas emissions by at least 55% by 2030 and a net zero target by 2050.
- The Republic of Korea, which will host the 2021 P4G Seoul Summit in May, will terminate public overseas coal finance and strengthen its NDC this year to be consistent with its 2050 net zero goal.
- China indicated that it will join the Kigali Amendment, strengthen the control of non-CO2 greenhouse gases, strictly control coal-fired power generation projects, and phase down coal consumption.
- Brazil committed to achieve net zero by 2050, end illegal deforestation by 2030, and double funding for deforestation enforcement.
- South Africa announced that it intends to strengthen its NDC and shift its intended emissions peak year ten years earlier to 2025.
- Russia noted the importance of carbon capture and storage from all sources, as well as atmospheric carbon removals. It also highlighted the importance of methane and called for international collaboration to address this powerful greenhouse gas.

[1] *The White House (2021)*

2. The importance of private capital

Despite the immense and, by global standards, unique scale of EU funding – which already includes a strict financial framework for exclusively green projects – it is undeniable that the financing needs to achieve the ambitious 2030 targets are far greater.

Figure 2: Investment gaps EU



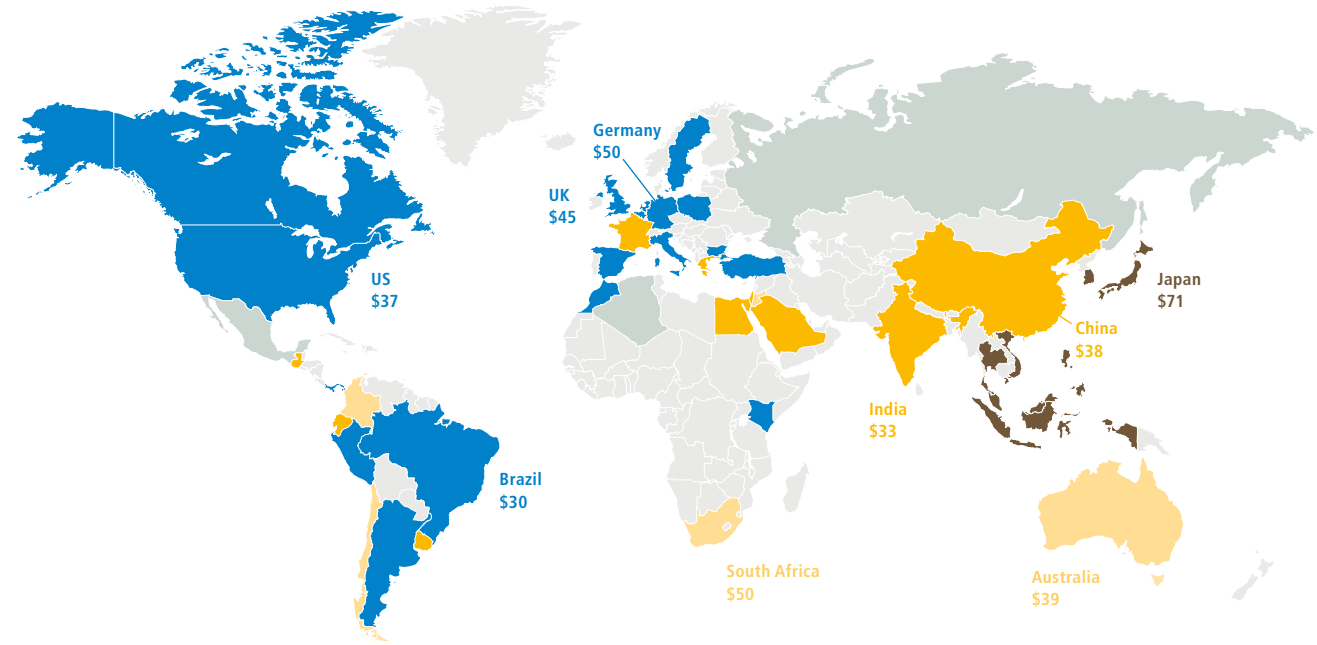
According to a European Commission document, there are investment gaps in the various sectors totalling EUR 470 billion per year in the period 2021-2027. In addition, these investment gaps are still based on a calculation referring to the old target of a 40% reduction in emissions and so the corresponding demand of EUR 460 billion is still categorically underestimated. According to a study by Bloomberg New Energy Finance, the goal of increasing the share of renewable electricity generation to 65% alone requires investments in renewable generation capacities amounting to €350 billion annually by 2030. The EU budget covers one year's investment needs at best, although to date the EU spends by far the most explicitly on green projects in a global comparison.

The EU example shows that success is largely dependent on the activation of private capital. While the demand for sustainable alternative investments continues to rise, it is up to the states to continue to guarantee stable framework conditions in order to maintain or increase the resilience and attractiveness of investments. The efficient and targeted use of government investment frameworks will be measured by additional incentives for private investors. So, what impact can be expected on the core elements of the transformation?

3. Renewable energies

Renewable energies are the cornerstone of the energy transition. Today solar-PV and wind power are already the cheapest sources of new energy generation and thus highly competitive.

Figure 3: Cheapest source of new generation capacity (electricity)[2]



Due to efficiency improvements and the associated cost reductions this applies to countries whose population represents two thirds and whose economic output represents 72% of the global total.

In order to steadily increase private investments as well as improving finance conditions in the future, stable and predictable cash flows are crucial. However, the fluctuating, weather-dependent generation of renewable energies continues to lead to high volatility in electricity prices, which will tend to increase as the share of renewable production rises. Despite the economic advantages in a cost comparison, renewable energies are still dependent on supporting measures to stabilise prices. As experience from previous crises shows, it is therefore advisable, to maintain and expand existing and functioning subsidy programmes. The announcement of increasingly rising tenders for renewable energies by the states leads us to expect stable and reliable framework conditions in this context.

In addition, positive impulses from the private enterprise sector are steadily growing. In the short to medium term, the capital costs of building fossil-fuel power plants will rise significantly. Domestic and international investors and lenders are becoming increasingly reluctant to finance such projects. On the one hand, this is supported by specially formulated ESG criteria that exclude climate-damaging investments. On the other hand, the risks associated with the projects also increase. These relate to long-term use or decommissioning and competitiveness against renewable technologies. In addition, the general bankability is increasingly endangered by the reluctance of insurance and reinsurance companies. IEEFA30 publishes a list of over 100 major banks and insurance companies that have already decided to exclude coal-related industries. In addition, sustainability goals of companies as well as government regulations, such as in the data centre segment within the EU, are creating a direct demand for renewable energies. In this context, private power purchase

[2] *BNEF (2019)*

agreements offer an advantageous hedging of energy prices for both producers and consumers, which in turn positively influences the expansion of renewable energies through fixed payment flows.

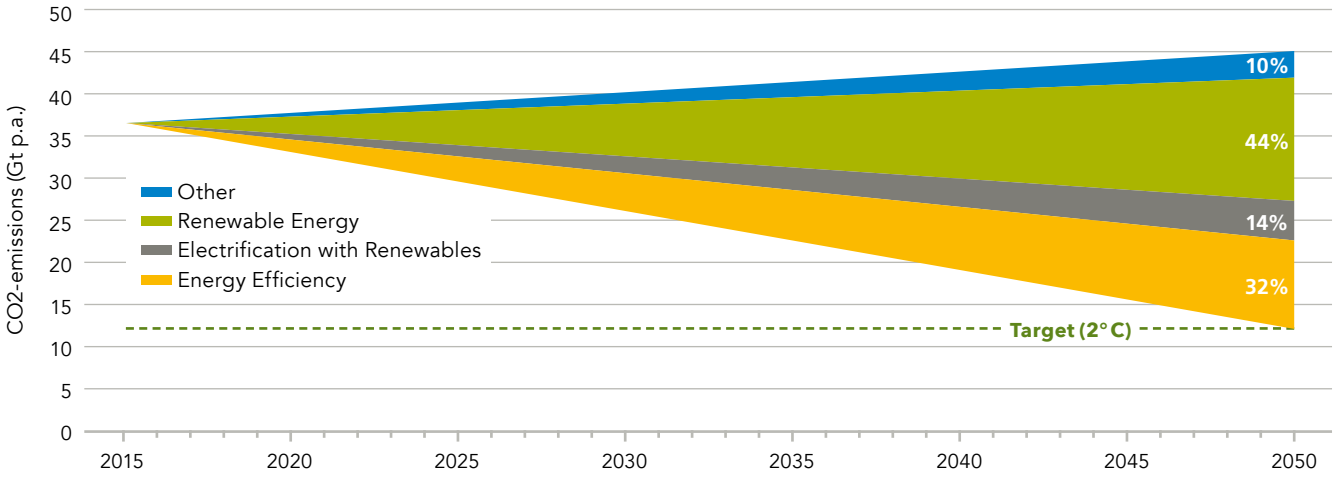
In markets in which renewable energies are not yet well established, access to cheap debt capital can significantly improve the conditions and thus accelerate the expansion. Opportunities for government support arise in this area through co-financing, guarantees, loans from development banks and the issuance of green bonds.

Based on the particularly positive effects on labour markets, the expansion of renewable energies offers a sustainable way out of the crisis. However, in the long term, investments must be made in order to exploit the cost advantages and, in the same course, gradually reduce the need for subsidies.

3. Energy efficiency

Reducing primary energy consumption is another cornerstone of the energy transition and is inextricably linked to renewable energies. 90% of the required CO2 reductions globally could be achieved by the increased use of renewable energies and an expansion of energy efficiency measures. The figure below illustrates how emissions would rise to 45 Gt CO2 per year in the reference case – and how the Paris targets could still be achieved through decisive and controlled action. The measures can even be achieved cost-effectively. While the relative costs of expanding or replacing conventional thermal power plants with renewable energies are already partly negative in most regions, efficiency measures tend to undercut these costs.

Figure 4: Technology-based CO2 savings potential[3]



The particular advantage of energy-efficient measures is the cost efficiency of these technologies. This allows for competitive savings potentials, especially for companies. For example, replacing old lighting elements alongside intelligent control methods and reorganising IT systems could allow energy savings of up to 70%. Decentralised self-supply with renewable energy also results in advantages for the entire system. For example, rooftop solar power systems reduce the load on the grid and enable cost-efficient electricity production for own use. Surpluses can be stored by integrated batteries or generate additional income by feeding them into the grid.

Exploiting the synergy effects between energy efficiency and renewable energies provides the key to decarbonising national economies. This is because a higher share of renewable energies increases system efficiency, as wind and solar do not record primary energy losses. Conversely, a reduction in electricity consumption leads to lower demand and an increase in the relative share of renewable energy in the electricity mix. Increasingly, electrification with renewables can also sustainably decarbonise sectors that are highly dependent on fossil fuels, such as the building and transport sectors. Energy efficiency and renewable energies are not in competition with each other. Both factors complement each other and together they could achieve considerable synergy effects and reduce the costs of the entire energy system.

Disadvantages arise from the often relatively high upfront investment costs, which small and medium-sized enterprises in particular shy away from despite short amortisation periods. So-called contracting can provide a remedy here. Private investors can finance the efficiency measures and be attractively remunerated by means of a part of the savings. This creates a classic win-win situation. The companies save from day 1 without financial burdens that would limit investments in the core business. Private investors are offered sustainable opportunities and society benefits from emission reductions and positive effects on the labour market.

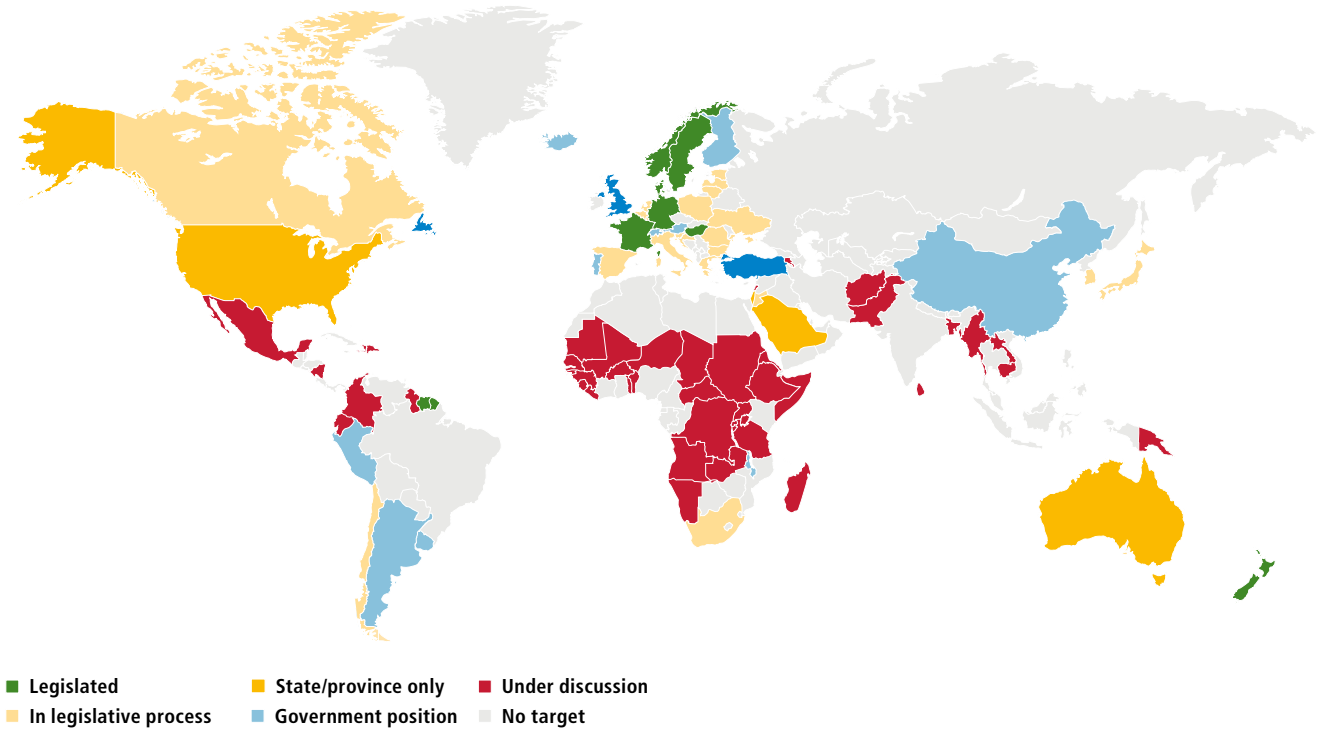
With the help of government support programmes, access to low-cost debt capital can be facilitated. In addition, government guarantees and subsidies can limit the risk and enable private involvement even in municipalities and companies with weaker credit ratings and increase implementation across the board.

[3] *IRENA: Synergies between renewable energy and energy efficiency (2017)*

5. Integration

The crisis can mark a turning point in energy supply by expanding government spending to stimulate the economy. But beyond an only short-term economic stimulus the goal should be a holistic approach. The unique financial room should be used to create stable and reliable framework conditions for private investors in the long term. At the same time this could increase the ability to reduce the need for subsidies in the long term. The objective of net-zero emissions of a continuously increasing number of countries requires the integration of renewable energies and the associated reorganisation of the energy supply.

Figure 5: Countries with carbon neutrality targets as of January 19, 2021[4]



In order to actually achieve the goal of net-zero, it is not enough to exclusively subsidise the expansion of renewable energies. If the explained cost advantages are not reflected in the market value, the dependence on subsidies remains and increasingly burdens state budgets and the competitiveness of end users, whilst the engagement of private investors is dampened through regulatory risks.

Just as state subsidies removed market barriers in the renewable energy sector and helped the technologies to become marketable and highly competitive, investments in new technologies must now be subsidised in order to increase the functioning of the energy markets. The focus here is on making demand and supply more flexible. Due to the uncontrollable dependence of renewable energies on weather conditions, their scalability is very limited. As a result, there is oversupply or undersupply of the base rate. This volatility is reflected to the same extent in energy prices. With an increasing share of renewable energies, the volatility of prices rises, with an increasing number of price peaks as well as partly negative prices in the case of oversupply. Subsidies and private power purchase agreements ensure stable revenues for renewable energy producers, but suspend price mechanisms. In order to stabilise the global expansion, limit the need for subsidies and guarantee the security of energy supply, a rethink is necessary. However, in view of the global efforts, it becomes clear which sales market is available for corresponding solutions. In this context, economic stimulus programmes aimed at this can achieve the maximum long-term effect and, moreover, realise the idea of net-zero, which is sometimes discredited as "utopia". That's why it can be called as "the race to net-zero".

[4] *BloombergNEF*

It is foreseeable that there will not be one solution, rather it is a multitude of technologies and a change in user behaviour that will lead to success in the long term. The focus here is on openness to technology and support for innovation. Governments currently have all the financial means at their disposal and, by investing in the reorganisation of the energy system, they can gradually reduce subsidies in the renewable energy sector. At the same time, they still create stable, long-term framework conditions for private investors. Private capital will be the key to achieve the climate goals.

For example the in the EU planned grid expansion will reduce bottlenecks and increase connectivity between countries. This will create opportunities to balance seasonal fluctuations. Planned investments in storage capacities, such as the announced European hydrogen strategy, form the basis for making supply more flexible.

Digitalisation and the resulting smart applications, the expansion of electromobility and energy efficiency, on the other hand, enable the flexibilisation of demand and form the foundation for the further integration of renewable energies. Furthermore, the expansion of emissions trading and increasing sector coupling directly increases the demand for renewable energy and opens up further growth potential in the market for private power purchase agreements, which is clearly gaining in importance.

The more countries follow the path of European energy, the greater the competition. The development of new growth areas would lead to innovations, technological progress and further cost reductions. Green recovery offers a sustainable way out of the current economic crisis by tackling climate change.

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