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FOR A EUROPEAN STRATEGIC INDUSTRIAL AUTONOMY

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EDITORIAL

FOR A EUROPEAN STRATEGIC INDUSTRIAL AUTONOMY

Over the last few months, Europe has faced an unprecedented health and economic crisis, which has exposed major vulnerabilities and in particular our overdependence in several critical and strategic sectors. Today's geopolitical realities force the EU institutions to redefine a new industrial strategy that is fit for the 21st century.

In the face of increased international competition and in a fast-growing global market with new needs, Europe must strike the right balance, one that fosters innovation, competitiveness and leadership.

First and foremost, competition rules must be adapted to current challenges in order to maximise the potential of our industries.

Setting up new legal tools such a digital tax or a carbon border adjustment mechanism will help further protect Europe's economic interests. Access to the Single Market must be in line with European standards and values so as to strengthen the continent's strategic autonomy all the while preserving the advantages of an open economy. This is what the European Commission is promoting through its concept of "open strategic autonomy".

Paving a new industrial path for Europe involves setting new objectives. This new industrial approach must first of all be more circular with disruptive technologies for greener and digital industrial production.

The EU is currently building its recovery plan aiming to increase its investment capacity in strategic sectors.

The EU should modernise and decarbonise its energy-intensive industries and boost investment in renewable infrastructure. To become more competitive and self-sufficient, the industry will need a secure supply of clean and affordable energy.

The EU should strengthen its industrial capacity in the digital world. The pandemic has shown how important it is for Europe to have access to the best physical and digital infrastructure. Building a safer and more inclusive digital society calls for a regulatory environment that fosters innovation and supports the development of new technologies and applications; as such, Artificial Intelligence is one of the keys to European competitiveness in the digital age.

The EU should increase its investment in the space sector if we are to develop a sustainable European space industry and foster synergies between civil, space and defence industries to pool resources and technologies. The "European preference" should secure and strengthen the European space industry along with its strategic autonomy.

The EU should regain its health sovereignty and build the Europe of Health, with the adoption of strong measures. Regaining our health sovereignty, in critical areas such as pharmaceuticals and food, remains essential to build resilience in order to ensure supply for Europe.

The EU's industrial transformation through an ambitious green and digital transformation strategy must help strengthen Europe's competitiveness on the world stage, create new quality jobs and develop new solutions for tomorrow's societal challenges.

Progress often emerges from crises. Now we'll see how Europe leverages the current crisis to unleash its political and economic leadership.

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TABLE OF CONTENTS

FOR A EUROPEAN STRATEGIC INDUSTRIAL AUTONOMY

Setting up a model to revive the European industry based on the **battery alliance**

MAROŠ ŠEFČOVIČ

Vice-President, European Commission

Batteries are a fundamentally important technology. They will literally power the future. With the COVID-19 crisis accelerating the twin green and digital transitions, significant investments are being channelled into their development.

But the true potential of batteries is only beginning to be tapped. As technology author Steven Levy wrote: "Every great device, gadget, electric car, and robot would be even greater if batteries didn't suck so badly."

Things have changed since he penned that in 2017, however. Not least because that same year, together with industrial actors, I established the European Battery Alliance to develop a competitive, innovative and sustainable battery value chain in Europe.

The Alliance covers the entire value chain, from the ethical sourcing of raw materials, their refining, battery cell production, to recycling and re-use. It is a vital enterprise if we are to avoid our dependency on batteries from third countries.

Three years on, this game-changing Alliance is a resounding success. With more than 500 industrial actors on board, it has turned Europe from laggard to frontrunner – and a battery hotspot.

In 2019, investment across the whole value chain reached over €60 billion, more than three times as much as China. We are at €25 billion already this year, twice as much as in China, despite the upheaval caused by the crisis.

Europe is well on track to become the second (after China) manufacturer of the lithium-ion battery cell by 2024, overtaking the US and the rest of Asia. In addition, we are moving from covering 3% to 80% of our battery-related needs for lithium by 2025.

Now is the time to press the accelerator on batteries, so to speak. Given their importance, they will be at the forefront of our recovery from COVID-19.

This includes establishing a fit-for-future regulatory framework that will promote our competitive edge in sustainability, performance and safety as well as our circular economy agenda for all batteries on the EU market. We are also working to leverage investment, including through the second Important Project of Common European Interest led by Germany.

But the legacy of the European Battery Alliance goes further. It showcases Europe's 21st century approach to industrial policy, providing a ready-to-use blueprint for other strategic sectors. I can think of three key success factors.

First, collaboration is our strength. This means building a joined-up agenda between the EU, national and regional levels – with public and private cooperation at its core – to support a portfolio of flagship projects.

Second, competitive sustainability is our main compass as well as advantage. We need to combine the objective of strong environmental standards with increased competitiveness across value chains, creating sustainable jobs and growth.

Third, it is crucial to agree on a shared ambitious vision in terms of 2030 objectives and partnerships we aim to forge.

For example, the Clean Hydrogen Alliance, launched earlier this year, brings together the producers of renewable and low-carbon hydrogen, those responsible for its transmission and distribution, and potential customers in sectors, such as mobility.

The aim is to establish the EU as global leader on hydrogen, achieving a wide deployment of hydrogen technologies by 2030 to support the Union's commitment to reaching carbon neutrality by 2050.

More recently, in September, I launched the European Raw Materials Alliance together with Thierry Breton, Commissioner for the Internal Market. This is another key area, intrinsically linked with our transition to a climate-neutral and digital Europe.

According to a high demand scenario, Europe will need almost 60 times more lithium and 15 times more cobalt by 2050 for electric cars and energy storage alone. Demand for rare earths used in permanent magnets critical for products like wind generators, electro-mobility solutions, batteries, radars and robots could increase up to ten-fold in the same period. Here, we are almost exclusively dependent on China, despite interesting deposits in Europe and our recycling and re-use potential.

This means we must diversify supply and make better use of the resources available within the EU; scale up the reuse, repair and recycling of products; support innovation for alternatives; and engage in strategic trade policy and economic diplomacy.

The European Raw Materials Alliance will mobilise industrial and innovation actors, Member States, regions, the European Investment Bank, investors, social partners and civil society – in order to help build our capacities along the entire value chain, from mining to waste recovery.

It will help identify bottlenecks, opportunities and investment cases that should be operational by 2025. But beyond that, the challenge is to substantially leverage the EU's strategic autonomy, our participation and position in global value chains.

We are already making some progress thanks to the European Battery Alliance, under which we are boosting our domestic capacities in the lithium industry – four sustainable mining and processing projects, totalling almost €2 billion, are underway in Europe.

And under my Strategic Foresight portfolio, we will look closely at vulnerabilities and capacities of Member States in relation to raw material.

The COVID-19 crisis has further highlighted the importance of the main philosophy behind the European Battery Alliance – the need to bolster Europe's resilience and strategic autonomy in critical industrial sectors. It now acts as a model.

In a complex and ever-changing world, a business-as-usual approach does not suffice. We need to be disruptive and work at the speed of light, relentlessly. The European Commission will spare no effort in mobilising our strategic resources and utilising our convening and enabling powers to make it a success.

Building a stronger, more resilient future for Europe today

THIERRY BRETON

Commissioner for Internal Market, European Commission

Today, Europe finds itself at an important point in time. The geopolitical changes in recent years have led to shifting global powers, and these trends have only been accelerated by the current coronavirus pandemic. To withstand these strong winds of change, we are determined to build a stronger, more resilient future for Europe, starting today.

To do this, Europe needs to strengthen its core values and foundations. During the coronavirus outbreak, we have shown again that, in an increasingly divided world, our strength lies in our solidarity and our unity. On the other hand, the crisis has also highlighted how our overreliance on others in critical areas can hamper our ability to react in in times of urgency. To counter this, we need to strengthen our strategic autonomy and ensure that Europe has the resources, capacity and key technologies to respond to future challenges and remain globally competitive. Because when we speak of strategic autonomy – or what is sometimes referred to as sovereignty or resilience – we are not talking about isolating ourselves from the world, but having choice, alternatives, competition. Avoiding unwanted dependencies, both economically and geopolitically..

All of this requires a profound transformation of our industry and our economy. Today, Europe is the world's number one industrial continent. To maintain this global edge, we need to support the transition towards a green future and enhance our leadership in digital technologies. Our new Industrial Strategy for Europe, published in March this year, lays down the blue print to support Europe's path towards these twin transitions. As the foundation of Europe's resilience, supporting the greening and digitalisation of industry will help strengthen Europe's global competitiveness, create new, quality jobs, and develop new solutions to societal challenges that help to meet the UN Sustainable Development Goals.

The Industrial Strategy identifies several key technological areas for common action.

Firstly, we need to improve Europe's digital sovereignty. This involves securing Europe's computational power, control of data and secure connectivity. For example, we are already working hard to improve Europe's capacity for the production of microelectronics, which are key to many industrial products from cars to connected objects, to space and defence projects. In addition, our aim is to further develop Europe's own cloud capacity and data storage in line with EU privacy rules - the importance of which was recently highlighted by the popular social platform dispute over access to users' data between the US and China.

Secondly, we're developing Europe's Green Tech to support the industry's decarbonisation and circular economy. One of the building blocks to achieve this is developing Europe's hydrogen capacity as a transitional path to decarbonisation. In addition, we have recently presented an Action Plan on critical raw materials, to help us ensure access to the raw materials needed for the deployment of new green technologies. The plan proposes actions to reduce Europe's dependency for critical materials on third countries, diversify supplies and improve resource circularity while promoting responsible sourcing worldwide. For the first time, we have added lithium, which is essential for batteries and e-mobility, to the list of critical raw materials published alongside this action plan.

Thirdly, we also need to strengthen Europe's technological capacities in the areas of security and defence. With the new European Defence Fund, we will join forces with industries to cooperate on key technological projects such as drones, combat planes, cybersecurity and space capacities.

Developing these strategic technological areas requires us to work with all relevant stakeholders along strategic value chains and industrial ecosystems. This is why we are setting up Industrial Alliances in key areas, such as batteries, hydrogen or critical raw materials. These Alliances bring together industrial actors and SMEs, public authorities at national and regional levels, and other stakeholders including NGOs, trade unions and research institutions. Their key aim is to identify investment projects to support the development of key technologies and areas for our industry to remain a global leader and our economy to prosper.

The political will for such large-scale projects and investments is there. Here, Important Projects of Common European Interest can be an important tool for flagship projects across Member States, as demonstrated in the case of microelectronics and batteries.

Last but not least, the success of our green and digital transitions; as well as improving our resilience and economic sovereignty, largely depends on the strength of an integrated and modernised European Single Market. The Single Market provides businesses with domestic opportunities and gives them leverage on the global stage. That's why it's important that we ensure a level playing field and prevent distortions of competition on the Single Market, for instance by protecting our companies from predatory foreign acquisitions and preventing potential distortions caused by foreign subsidies.

All this shows that Europe is working hard to respond to the changing demands of our times. We are improving our resilience, while remaining true to our values and open to the world. With this, we're setting a global example and meeting the expectations of the next generation to build a better future, starting today.

Strengthening the EU's resilience and **strategic autonomy**

BRUNO LE MAIRE

French Minister for Economy and Finances

The sanitary crisis with the disruption of goods and services flows reminded Europe of the vulnerabilities in its economic model, notably its dependency on a limited set of suppliers. Years of offshoring in the pharmaceutical sector has led us to a situation where 80% of active pharmaceutical ingredients are today produced outside of the Union, an overreliance which created severe supply breakdowns of medicine used in reanimation during the crisis.

Yet, beyond their immediate security, a too strong dependence on one supplier can also endanger our citizens' future prosperity. We should draw the lessons from the crisis and prepare a strategy for the longer term. Our duty, as politicians, is to protect our citizens and businesses from external threats and shocks. All in all, this is about better protecting and strengthening the Union's strategic autonomy and resilience.

What do we mean by strategic autonomy and resilience?

Strategic autonomy is not about turning away from openness and the benefits of trade. But for certain sectors with a strategic dimension, such as health, defence or digital, we want Europe to secure a minimum production capacity in the EU, or diversify our trading partners.

One way to preserve our strategic autonomy is to improve our resilience. This means our capacity to cope with crisis in the short term. But it also requires us to continue investing, in the digital and green transition, if we want to achieve resilience in the longer term, in addition to the investments necessary to compensate for difficulties our businesses are going through. Similarly, investments in green value chains, for instance recycling industries and more widely the circular economy, contribute to reducing our dependency on energy and raw materials from third countries.

We should develop strategic stockpiling, geographic diversification of supply and, where appropriate, increase European production capacity, to build up our autonomy in these strategic areas.

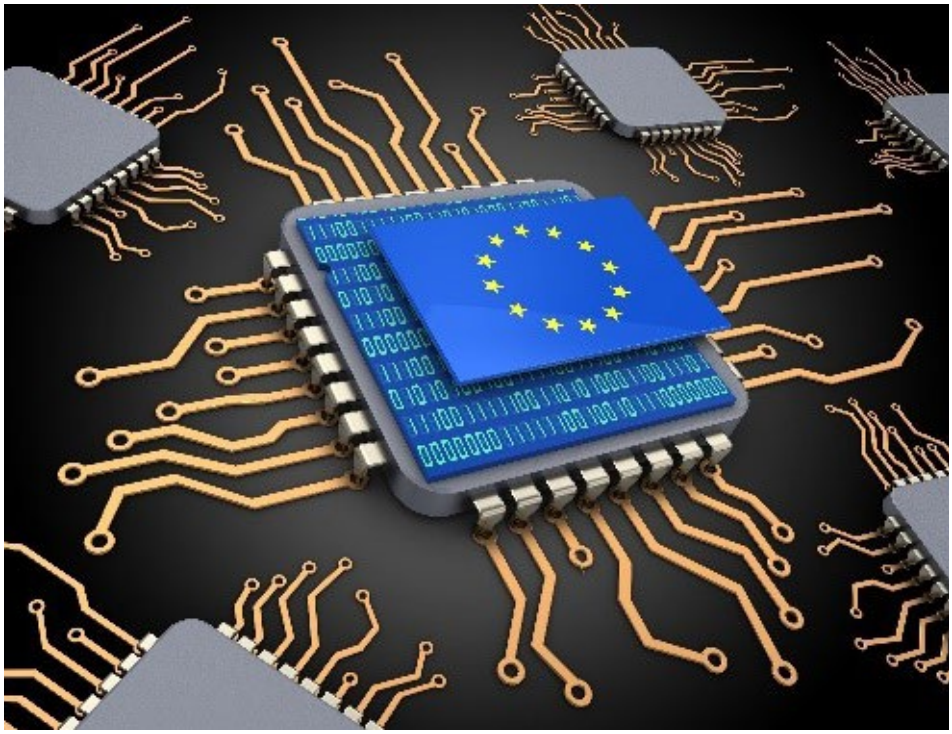
With a bold and ambitious industrial policy, we will strengthen the Union's strategic autonomy and lay the groundwork for its future economic sovereignty. It will imply reshoring and relocating some strategic production chains within the European Union.

This will only be possible with sufficient financing. The UE's recovery plan, as well as progress on Capital Markets Union and Banking Union, will contribute to this policy goal by bringing both public and private investment.

Creating new industrial alliances at European level is also a priority.

We should invest in breakthrough industrial and innovation projects following the model of what we have done for electric batteries. The French government will continue working in the coming months to build new Important Projects of Common European Interest (IPCEIs) in areas key to our present and future strategic autonomy, especially in hydrogen. We are also ready to discuss with our European partners further projects in the digital sector, such as a second IPCEI for microelectronics or expanding European the Franco-German GAIA-X data infrastructure project.

Our industrial policy will succeed only if we coordinate our policies at the European level. Our competition policy, must be modernized in order to ensure a level playing field with third country players to give European firms the capacity to compete at the international level. The adoption of an ambitious Digital Service Act will be an opportunity to upgrade the EU's digital rulebook to respond to the challenges brought by the digital sector.



Competition and trade policy need to be reconfigured to address today's rising international tensions. The French government will make full use of its investment screening tool, and will encourage its counterparts to resort to the newly introduced cooperation mechanism to better protect our European strategic assets, notably in the context of the COVID crisis. We therefore welcome proposals from the Commission on new instruments against the effects of distortive foreign subsidies in the internal market. We will also continue to support a reinforced use of the Union's trade defense instruments whenever unfair practices are identified, in line with the recent appointment of a Chief trade enforcement officer within the Commission.

Finally, European's strategic autonomy might be more easily protected if it becomes one of the main global players. The implementation of a WTO-compliant carbon border adjustment mechanism will strengthen global cooperation against climate change by reducing carbon leakages and incentivizing foreign producers to improve their processes. The EU should build on its asset, the Single Market by further integrating it to protect intra-European flows from future shocks.

The Covid-19 crisis is a turning point for the European Union. By the end of this year, European leaders will have reached an agreement on Europe's recovery plan and laid the groundwork for our future economic sovereignty.

An **industrial policy** geared towards future-proof sectors

CRISTIAN-SILVIU BUȘOI

MEP (EPP Group), Chair of ITRE Committee

For years, one of the main challenges of the Union was to stimulate economic growth while ensuring global competitiveness. In 2020, in addition, the Union needs to deliver towards climate-neutrality by 2050, and recover after the COVID pandemic. The 'industrial renaissance' of Europe proposed in 2014 needs to be re-shaped in an industrial revolution. Why I am choosing this wording? Deep transformation of our industrial sectors is what we need, and one that fosters digitalization, innovation and new technologies, while protecting intellectual property and reducing the carbon footprint. In order to maintain the global competitiveness of European industry, many current shortcomings, such as insufficient investment levels, widening productivity and innovation gaps, and skills shortages, must be addressed.

The proposed EU Industrial Strategy released by the Commission in March this year focuses on the objective of maintaining the Union's industry's global competitiveness whilst at the same time helping deliver on its ambitious climate goals. This proposal was released before we knew the magnitude of the pandemic and before the new 2030 climate target. We need to match the proposals with the 2030 target. As regards the target, I strongly believe that the recent vote in the Plenary was "overambitous" and that a 60% target will not be feasible in terms of jobs and different national starting points. In addition the study released by the Commission states that the 55% reduction in greenhouse gas emissions was "achievable" and "beneficial" for the EU economy. I sincerely hope that we will reach an agreement with the Council on a target that will be feasible for all MS.

The Green Recovery is a win-win strategy. Through a Green Recovery, MS will have the opportunity to unleash innovation, undertake wider reaching and fundamental restructuring of critical industrial sectors, in particular the heavy industry sectors, such as steel, cement, etc; and accelerate at the same time the existing climate ambitions. It will help Member States restore their economies and proofing sectors in the transition toward climate ambitions, and at the same time, creating jobs and ensure certainty to investors.

Nevertheless, when speaking about the transformation of our industry to a future-proof one, it can only happen if we align the objective of transition towards clean industries with the need to remain and become competitive inside the Union and worldwide. The transition to clean industries implies deepening the transition of our energy sector, that needs to be balanced and feasible for all our regions and for all our industrial sectors, no regions should left behind, in particular those reliant on coal, and no sector of industry should be further affected, especially given the COVID 19 economic impact.

Moreover, the COVID pandemic has highlighted Europe's over-dependency on international supply chains, which have been largely disrupted, and consequently the need for European strategic autonomy in the industrial extent. The COVID pandemic has also complicated the delivery of finalised goods, which often require onsite visits and approvals. Many of the industrial sectors have been disrupted also due to the wide variety of containment measures taken by the MS. According to the Eurostat, the industrial production decreased during the first months of the pandemic and various industry groups where affected in a more drastic and severe way than others. Despite the partial recovery over the summer, the losses have not been recovered still.

To give you a more concrete example, in the healthcare associated industrial sector, the COVID-19 has deepen medicines and vaccines shortage and has revealed shortages in the supply of equipment. We also encounter the situation when the supply can be disrupted if one of the links prior to finalised products is broken on intermediate products and raw materials, namely the API situation. In the near future we need to start discussing on bringing back API to Europe and the manufacturing capacities, whether we are speaking about new medicines, generics or biosimilars.

Whether we are speaking in particular about sectors of industry, or in general, about our industrial base in the Union, we need an industrial policy that should include actions to keep the manufacturing footprint inside the Union and further increase the existing one to meet the demand.

At the same time, for our industrial base to become resilient for our next generations, the industrial policy will have to enhance industrial competitiveness and to promote innovation and sustainability, while reaching the climate ambitions.

A joint action towards a **European recovery**

PHILIPPE DONNET
Generali Group CEO

July 21 will go down in the history of the European Union as **a landmark date**. Following fierce contrasts in the early months of the Covid-19 crisis, the agreement reached by Member States on the recovery package was ultimately **more ambitious than previously thought possible**, from a political point of view.

Together, the unprecedented decision to suspend the Stability and Growth Pact, the perfectly-timed intervention of the ECB and, finally, the scale of the Recovery Fund marked a first important step towards a common fiscal policy. And although a powerful and permanent joint fiscal approach is still distant, securing European solidarity through a significant amount of grants is certainly a welcoming political signal that **Europe is still there to help in times of crisis**.

Now, it is about ensuring that the money is available in the shortest time possible and it is spent: this enormous firepower should be conditional on wise investment decisions that can create growth and jobs. In the months and years to come, we shall all – governments, public institutions, private companies – move in synergy towards two goals: the **relaunch of the European economy** and the **development of Europe's future resilience**.

With its €11 trillion of assets under management - and Generali alone accounting for over €630 billion - **the European insurance industry has an important role to play in the relaunch of the European economy**. Our sector can help manage the risks and transfer funds to individuals and businesses when unexpected crises like Covid-19 strike, and it can support the economic recovery by enabling capital to flow into investments and lending practices.

At Generali, we firmly believe that **sustainability should be at the heart of the recovery effort**. The ambitious goals of the **European Green Deal**, which aims to make Europe the first climate-neutral continent by 2050, need to be pursued with even greater commitment in light of this pandemic. This crisis can be the catalyst for a new impetus towards building and modernising infrastructures, driving companies towards greener practices or productions and investing in sectors that shall make the EU both more technologically advanced and sustainable.

With this in mind, we are currently developing a long-term investment program with the aim of contributing to the sustainable economic recovery of key European countries in which we operate. This shall happen by investing in sectors such as **digital, green mobility and sustainable living**, fuelling growth and supporting enterprises that share our idea of responsible leadership to create a more sustainable world. These are different initiatives that can be integrated into an ambitious industrial strategy in Europe.

As we strive to relaunch our economies, we must also work to **make the whole system more resilient and better equipped to face the next systemic crisis**.

One of the lessons we learned this year is that **Europe** - and more broadly the whole world - **was not prepared for a pandemic**. Therefore, it is vital to ensure a better coordination of health policies, cross-border movement of people and goods, and faster intervention and compensation capabilities.

This is another key topic where the insurance industry can play an important role to find viable and sustainable solutions. As an example, thousands of small and medium enterprises all across Europe were seriously undermined by the lockdown measures imposed by governments in the past months. In many countries, this sparked an intense debate as to how to cover their losses caused by the **business interruption**. The great uncertainty that still remains around it shows once more that events of this magnitude go way beyond the traditional rules regulating the insurability of risks. Quite simply, it would be impossible for the insurance and reinsurance industry to fully cover all the losses deriving from them, and this is why **a public-private partnership in this context is key**.

We may consider a traditional insurance scheme or endorse **innovative solutions** such as pandemic bonds or, as we are doing, **the issue of a pandemic pool**, which could provide a concrete, harmonised solution to a complex problem at European level. What we have in mind is **a multi-layered insurance coverage, where the private sector, national governments and European institutions coordinate protection and recovery measures**. We have started discussing this idea with EIOPA, the European Commission and the industry.

This is a Hamiltonian moment for Europe, a unique opportunity to write a page of history and reshape the economic system in a sustainable direction. We all need to work together to relaunch the European economy and to build Europe's future resilience. At Generali, we are ready to step up to this immense challenge, bringing our expertise as a long-term investor to help governments make investments that can be the engine of Europe's economic and social growth.

The pandemic presents an opportunity to recolour **industry green**

AMBROISE FAYOLLE

Vice President of the European Investment Bank

The next decade is our last chance to avoid the most catastrophic consequences of climate change. We need to act now, and the COVID-19 pandemic provides us with an opportunity to do so.

As a result of the pandemic, there is unique political momentum for joint, decisive action of the kind needed to implement the European Green Deal, with its aim of a net-zero carbon continent by 2050 and growth decoupled from resource use. We need to use this opportunity to make sure the EU's recovery programme supports a recovery that is green and smart. This would lay the foundation for a fair future and strong, competitive European industry, which leads in technology and green transformation.

Where does the transformation begin? The industrial sector produces about one-quarter of global GDP and employment. Energy-intensive industries, such as steel, chemicals and cement, are important to our economy and many of our strategic value chains. However, our industrial activities also produce large amounts of greenhouse gases. Roughly 25% of the EU's greenhouse gas emissions come from industry. That is why the decarbonisation and modernisation of industry will be crucial to reaching our climate targets.

The extent to which industry can benefit from and contribute to a climate-neutral future will largely depend on its ability to scale new solutions, implement existing technologies, and continue to develop and commercialise new products and breakthrough technologies.

Our capacity to innovate will be critical.

Although significant cost reductions and fast adoption of renewable energies such as solar, wind and energy storage have transformed the energy landscape in recent years, carbon-neutral energy often remains two or three times more expensive than fossil-sourced energy. Many technologies needed for deep carbonisation, such as low-carbon, hydrogen-based production of steel and chemicals, are not scalable yet. In others cases, solutions are technically viable but economically challenging. High capital costs, lack of incentives or revenue models, long payback times and high project risks are just some of the factors restricting green investment.

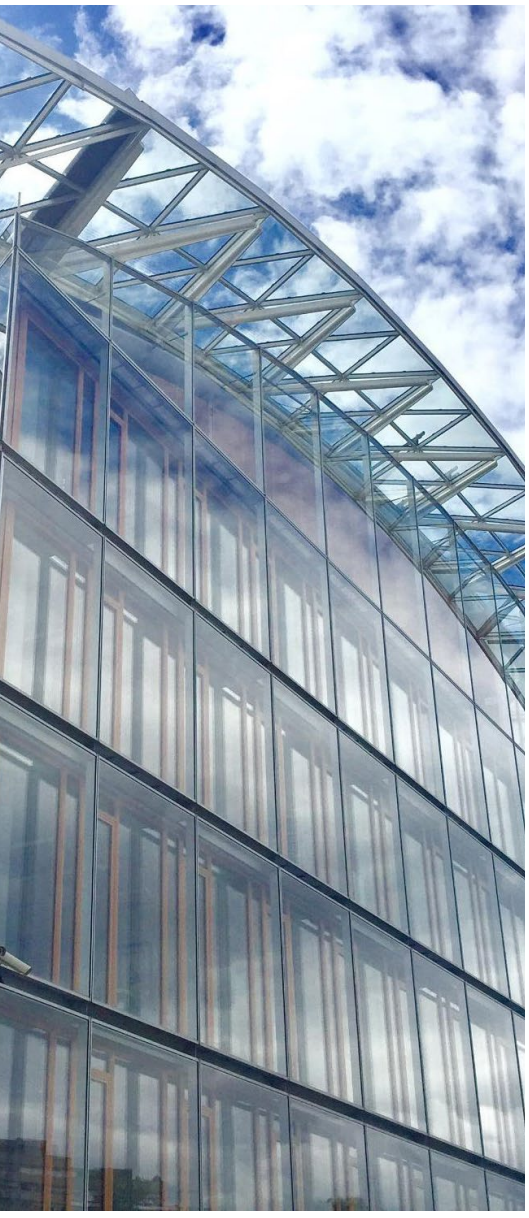
That is why we need to further develop and deploy innovations such as new low-carbon production technologies (e.g. low carbon cement, hydrogen-based chemicals and newer approaches to steelmaking), a comprehensive circular economy, material efficiency along the value chain, CO_2-free secondary energy carriers (electricity, synthetic methane and hydrogen) and use more biomass or carbon capture solutions. We also need to invest more in digitisation and big data to unlock further untapped potential for a greener industry.

Pursuing these multiple technological pathways is a daunting challenge, and it will not be cheap. According to McKinsey, the global decarbonisation of industry will cost between $11 trillion and $21 trillion by 2050. Meeting the EU target of net-zero carbon emissions by 2050 will require annual investment in the decarbonisation of industry between €40 billion and €140 billion (roughly 0.2% to 0.8% of EU GDP).

But Europe is not doing enough to support innovation. Every year for the past 15 years, the EU has invested around 1.5 percentage points of its GDP less in research, development and innovation than our main competitors from the USA, China and South Korea. And contrary to our ambition to lead

cleantech, we only invest €7.5 billion a year in climate-related research and development. That's considerably less than the USA with €12 billion, or China with €8.6 billion. The pandemic is also taking its toll on RDI investment in Europe.

If we want Europe to be influential and powerful enough to safeguard our values and prosperity, we need to pioneer and lead technology and innovation. Developing technologies before anyone else does keeps industrial production in Europe (and thereby millions of jobs) even as the cost of CO_2 steadily rises. Europe's technologically advanced position in high emitting industries such as steel manufacturing, chemicals and cement also provides an opportunity to lead global decarbonisation. Once the feasibility of technologies is proven at scale in Europe, industrial decarbonisation is also more likely to accelerate on a global level. That's to the benefit of all.



It is unclear which technologies will prevail. Industry thus faces multiple possible decarbonisation pathways. According to most researchers, no single solution will be able to achieve complete decarbonisation on its own.

This situation poses a huge problem, as companies adopt a wait-and-see attitude and tend to stall investment. Even worse, some continue to rely on and invest in proven, yet unsustainable solutions. Around 80% of firms are postponing or cancelling planned investment due to a perception of high uncertainty on the markets.

Moreover, for many businesses cutting emissions is associated with an expensive and typically inconvenient burden that will mostly benefit others or future generations. Whereas the benefits accrue over decades and centuries, the costs must be paid upfront.

Consequently, many innovations are not progressing fast enough. We need to accelerate their deployment and commercialisation, and boost the development of new disruptive technologies and services at the same time. We need investments that drive down technology costs, increase efficiencies, support first movers, and create new markets.

In this context, multilateral financial institutions, like the European Investment Bank, can play a crucial role in enabling the private and public sector to invest more in innovation and green technologies. As the EU's climate bank, the EIB Group aims to unlock more than EUR 1 trillion of climate action and environmental investment over the next decade. By providing patient, long-term financing and taking a part of the investment risk, the European Investment Bank can help to develop a more *predictable* market environment for new low-carbon technologies and help companies explore uncharted territories.

We have developed a wide range of innovative financial instruments and advisory services—often together with national partners—that can support the full range of innovation activities and actors, from university spinouts, start-ups and first-of-a-kind demonstration plants to large-scale corporate projects. As such, the European Investment Bank acts as an incubator, sheltering technologies and new business models, and enabling the creation, survival and growth of comprehensive technological and sustainable alternatives.

A recent example of our support for industrial innovation is Northvolt, a Swedish battery manufacturer. Our €52.5 million loan supported Northvolt's battery manufacturing demonstration plant. The 125MWh Li-ion batteries Demonstration Line had the dual purpose of validating the technical feasibility and viability of the proposed production techniques and acting as a development and research facility. The successful demonstration project was key to launching Europe's first homegrown giga factory for lithium-ion battery cells, *Northvolt Ett*, in Sweden in July 2020. The European Investment Bank also backed the giga factory with a EUR 300 million loan.

Another example is a €75 million loan to support carbon capture and usage as well as a bio-coal demonstration project in a steel plant in Belgium. The project could produce considerable amounts of ethanol through using off-gases from primary steel manufacturing, a greenhouse gas emissions-intensive process, and substituting bio-coal from waste wood for fossil coal. The aim is to demonstrate the technical feasibility and viability of these proposed technologies at full industrial scales.

In addition to projects, the EIB also backs broader initiatives for the EU industry such as the European Battery Alliance and most recently the European Raw Materials Alliance. This new alliance is part of the European Commission's Action Plan on Critical Raw Materials and aims to reduce Europe's dependency on non-energy raw materials for industrial value-chains. Access to sustainable raw materials is crucial if Europe wants to continue to play a leading role in the entire value chain of innovative low carbon technologies. We therefore need to pursue better material recycling and circular economy principles as well as innovative solutions to reduce primary material usage, substitute critical raw materials and improve efficiency in extraction. The EIB will continue to make a difference in these areas and mobilise financing, including via risk-sharing instruments.

The transformation to a low-carbon industry requires investment in fundamental technology change. We need to accelerate the **technological change to make the transition to a greener industry possible in the time we have left.**

Europe now has a unique chance to take decisive action. We need to use the momentum of the recovery plan to accelerate the green transformation of Europe's industry while ensuring its competitiveness. Public institutions such as the European Investment Bank can play a crucial role by enabling and accelerating investment.

ALFRED **STERN**
Chief Executive (CEO) of Borealis

Climate-neutral and **circular economy** solutions are key to building a sustainable recovery for Europe

Borealis is a leading provider of innovative solutions in the fields of polyolefins, base chemicals and fertilizers. Our vision for 2035 is to be the global leader in advanced and circular polyolefins solutions. We will keep discovering and innovating on our way forward because progress is what we need to have a better life for everyone. Borealis fully supports the European Commission's aim to transform Europe into a more circular and resource-efficient economy and to become climate-neutral by 2050. We believe that reaching these goals will only be possible with the help of climate-neutral and circular economy solutions, and that the chemical industry is playing a critical role in Europe's transition by providing the products that will enable European society to be transformed, and by transforming our own production processes.

Life demands progress – We are re-inventing for more sustainable living

Borealis welcomes the ambition set out in the Green Deal, which is in line with our strategy. We believe that a transition must be made from the linear model to the circular model of keeping materials in use. It is recognised that the Green Deal will have an impact on our business and it is important to be actively engaged in the discussion. At Borealis, we have created EverMinds™, a platform that brings stakeholders together to constantly innovate new technologies and portfolio products, with circularity for plastics.

We also welcome the Next Generation EU recovery effort of EUR 750 billion which will boost the EU budget with new financing raised on the financial markets for 2021-2024, as well as the fact that part of these funds will be dedicated to the green and digital transition. It is important to foster an economic recovery and an industrial transformation with climate-neutral and circular economy solutions that help to create a better future. Life demands progress, and we believe that investments in the following sectors are key in order to advance the Green Deal and the recovery efforts.

1. **Investment projects for a circular carbon economy**
   - The chemical industry's low-carbon transition will require massive amounts of renewable and competitively priced energy and electrical networks. Investments should be prioritised in renewable electricity capacity, the production of hydrogen from renewable electricity, green ammonia as storage of hydrogen and networks and hydrogen pipelines
   - Potential chemical low-carbon projects include for example the direct and indirect electrification of chemical processes, the promotion of industrial symbiosis, the improvement of energy efficiency of chemical process through catalysis and separation technologies, the utilisation of waste including plastic and other waste as an alternative resource, the use of CO_2 and biomass as an alternative carbon feedstock and the enabling of technologies such as carbon capture and storage (CCS) and *carbon* capture and utilisation (CCU)
   - Investment projects for the solar energy sector are key to making solar a more viable energy alternative than ever before

2. **Investment projects for a plastics circular economy**
   - Improved plastics collection, sorting operations and waste distribution systems form the basis for recycling
   - Development and use of renewable feedstock for circular polyolefin products, such as the Bornewables™ portfolio by Borealis
   - Advanced mechanical and monomer chemical recycling operations

The chemical industry's low-carbon transition will require massive amounts of renewable and competitively priced energy and electrical networks. Photo: © Borealis

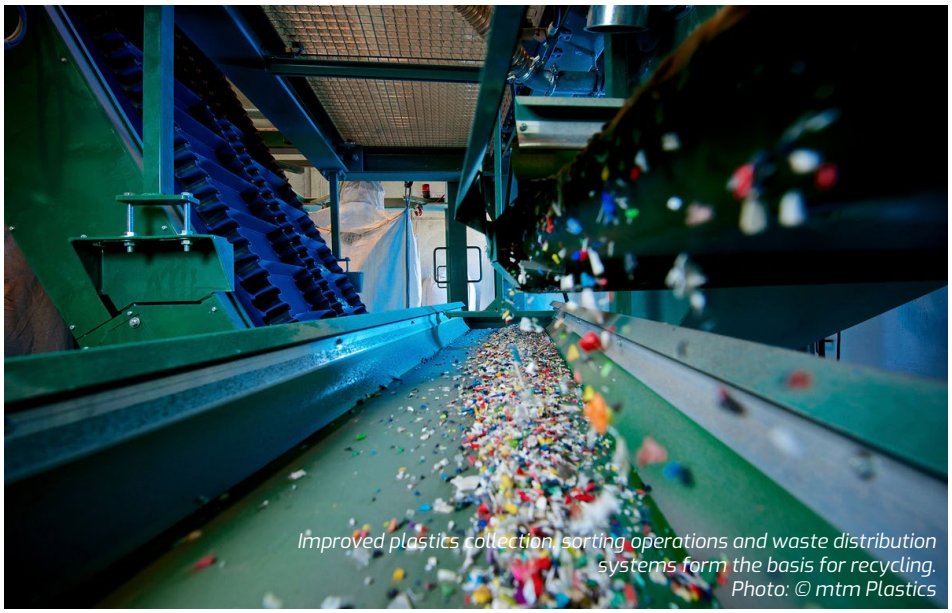
- Overall, we believe that we need a new policy framework that incentivises investments in innovation and new technologies for a circular economy for plastics

3. **Green infrastructure and transport**
- Polyolefin-based solutions are supporting the drive towards clean mobility and the reduction of CO_2 emissions through their low density and light weight
- The electrical battery industry is a key enabler for the vehicle sector in the production and deployment of sustainable modes of transport, including significant investments in next-generation batteries and fast-tracking the work of the European Battery Alliance
- Electrification of the transport sector by accelerating the production and deployment of electrical components and infrastructure for electric cars

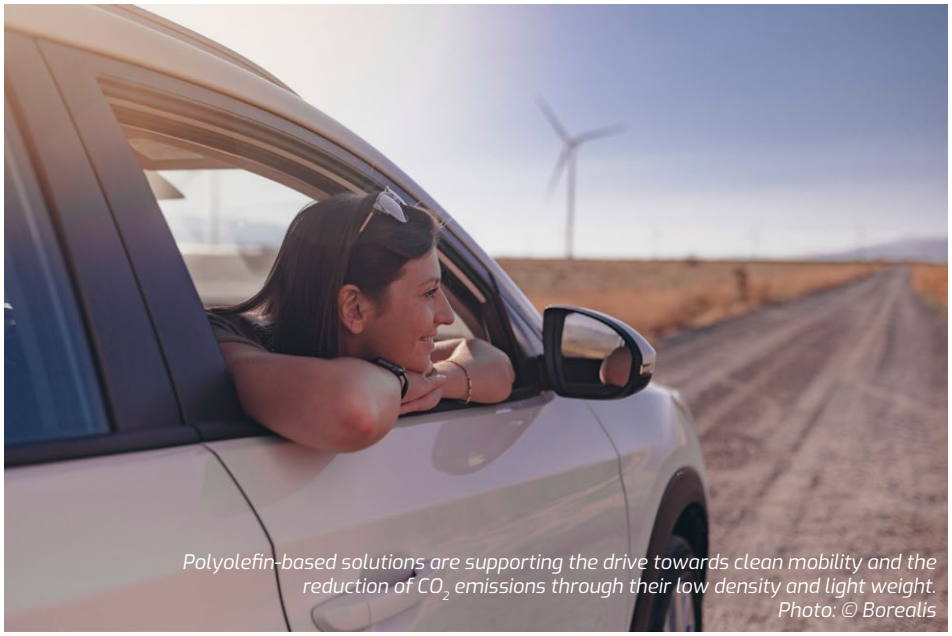
4. **Investment projects for the farming sector for nutrient management**
- Digital tools, such as Borealis NutriGuide® or N-pilot®, are needed to make farming more efficient and precise in order to avoid nutrient losses to the environment and help to feed more people and livestock
- The circular economy in fertilization, e.g. by utilising nutrient recovery from waste water

For Europe to become more autonomous in medical devices and personal protection equipment, we believe that reliable solutions and the use of the best possible materials that add value to healthcare are essential in order to secure devices and their contents. Becoming more autonomous in energy and raw materials requires the development of renewable energy and energy networks across Europe, as well as the development of the circular economy by using more waste to produce plastics.

We are committed to creating a world where there is *no waste* of resources, *no emissions* into the environment and *no harm* to society, while delivering *prosperity* for Borealis and our stakeholders. This ambition guides the decisions we take every day. It describes a perfect world, one we should endeavour to create. The future is shaped by the decisions of today, and we can only achieve our goal by working together with our stakeholders to shape the regulations and policy framework to create stable and attractive investment conditions in sustainability and circular economy.



Improved plastics collection, sorting operations and waste distribution systems form the basis for recycling. Photo: © mtm Plastics



Polyolefin-based solutions are supporting the drive towards clean mobility and the reduction of CO_2 emissions through their low density and light weight. Photo: © Borealis

MARIE-PIERRE **VEDRENNE**

MEP (Renew Europe Group),
Vice-Chair of the European Parliament
Committee on International Trade

How trade policy could better facilitate the transition **towards a greener**, fairer, and **more responsible economy**

At a time when Europe is building its recovery plan and shaping its future, trade policy must contribute to setting up a coordinated European recovery that ensures a socially fair and environmentally responsible transition. As an undeniable economic instrument and diplomatic lever, the European Union's trade policy faces many challenges. It must demonstrate that it is protecting its businesses and citizens against distortions of competition and contributing to our objectives of digital sovereignty and the fight against climate change. So, how should and can trade policy promote fair international competition that defends a green and responsible economy?

In an interconnected world, E**urope must defend and contribute to the setting up of a regulated, fair, and sustainable world trade**. As part of the Trade Policy Review, the European Commission promotes "an open strategic autonomy". But which actual tools should we create or strengthen to meet the challenges that lie before us? European openness refers to the fact that one in seven jobs depends on our exports. Our internal market – which is undoubtedly attractive – must continue to attract investors who can promote a virtuous and job-creating economic recovery. At the same time, pursuing our strategic autonomy means putting an end to naïve Europe to build a Union that regains control over its future.

From Chinese overcapacity to investment control, Europe must defend its interests more vigorously by making good use of its trade defence instruments alongside new, adequate legal tools that allow it to level the playing field with countries that care little for the rules. Therefore, instruments such as **reciprocity in our public procurement must finally be introduced!**

We are now experiencing a context of confrontation and tension, with third States taking unilateral and illegal measures that go against the rules defined within the multilateral framework. Of course, the EU must contribute to an ambitious World Trade Organisation (WTO) reform, more particularly in the field of industrial subsidies or the unblocking of the Appellate Body for the settlement of disputes. Although defending multilateralism is crucial, let us not place all our hopes in the multilateral system alone, let us strengthen certain areas of cooperation: **let us take action on all fronts, both multilateral and bilateral**.

Defending our interests can only be achieved through coordinated action and greater European unity in trade matters. That is why ambitious proposals concerning the regulation on the application of trade rules, for which I am the rapporteur, have been put on the table by the European Parliament. To ensure efficiency and coherence when we are under attack, we must be able to defend ourselves and have bargaining chips. **Deterrence or protection does not mean protectionism!** Some Member States still have too many reservations: not being able to take measures in all the areas under discussion is inconceivable, and not being able to react immediately is even more so! The Council must take steps towards the strong and united stance of the European Parliament; we must all go in the same direction: that of defending our European interests. President Von Der Leyen's letter of intent refers to an "instrument to deter and counteract coercive actions by third countries", good news that reflects the Parliament's ambition and desire for all our partners to adhere to the rules they have set themselves.

Supporting the European economic activity and especially our SMEs is essential. And strengthening instruments such as those abovementioned will help us to contribute effectively to the fight against all forms of unfair competition. Unfair competition goes beyond the social and fiscal level and affects the environment. I welcome the proposal for a **carbon border adjustment mechanism**. The European Union remains a normative power, and through the adoption of ambitious directives and regulations, we are setting high standards. **Those wishing to gain access to our internal market must comply with our rules and quality standards; it is a matter of fairness but also of consumer protection**. This "carbon mechanism" aims at reducing the differences across climate ambitions. As from the beginning of 2021, we need an ambitious proposal in line with WTO rules.

The COVID crisis has reaffirmed one conviction: **we must diversify our supply sources**. We cannot depend on a single player, and the European industrial policy will also have to do its part in fostering an "open strategic autonomy". Value chains have become far too complex and long. A holistic reflection must be undertaken to enhance their resilience. The negotiations on the **duty of diligence** will contribute to ensuring responsible value chains.

Finally, I would like to stress a key point: concluding trade agreements is one thing, but ensuring their **proper implementation** is quite another! On this last point, the European Union has ample room for improvement. All the opportunities offered by our free trade agreements do not always become reality; worse yet, the respect of reciprocal commitments is not guaranteed. Europe now has a Chief Trade Enforcement Officer. Without sufficient and effective human, financial and legal means, enforcement of trade agreements will not be effective! No barriers to market entry when they do not need to be, more controls to ensure the conformity and traceability of products entering our market; it is by working on such developments that we will also contribute to restoring the confidence of our companies and our citizens in our trade policy: a policy that will play its full role in building a green, fair and responsible economic recovery!

No resilience without sustainability

MIRIAM DALLI

MEP (S&D Group)
Member of the ENVI Committee

What are the chances that we can create a resilient economy in times of a pandemic? Logic would dictate that resilience is built ahead of a crisis in order to weather out the storm but reality many times means that what is logic has to be adapted to the circumstances we face.

Year 2020 will soon be over, and economies everywhere are still reeling from the impact of the health pandemic we are still facing and which is translating itself into an economic crisis.

How to move forward?

It is clear that a difficult period awaits us. Global growth is projected at –4.9 percent in 2020, 1.9 percentage points below the April 2020 forecast of the IMF's World Economic Outlook (WEO). The recovery is projected to be more gradual than previously forecast. In 2021 global growth is projected at 5.4 percent. The WEO clearly states that the adverse impact on low-income households is particularly acute, imperiling the significant progress made in reducing extreme poverty in the world since the 1990s.

The IMF's WEO Update places its attention on strong multilateral cooperation on multiple fronts, with a special emphasis on maintaining record drop in greenhouse gas emissions during the pandemic. As we witness another rise in the number of Covid cases, it remains the policymakers' responsibility to ensure that countries are not caught off guard.

Five years ago, all United Nations Member States adopted the Sustainable Development Goals (SDGs) – a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These goals, together with the Paris Agreement target, become important now more than ever. In view of the pandemic, we should be doing more – not less – to meet these targets. The bottom line of these targets is a sustainable future. Achieving this goes hand-in-hand with economic growth and job creation which in turn helps to develop a fairer and just society.

Earlier this year, the European Commission launched its 'New Industrial Strategy for Europe'. Industry makes up more than than 20% of the EU's economy and employs around 35 million people. To this, one can add the many millions more jobs linked to it at home and abroad. It accounts for 80% of goods exports and is a key reason behind the EU's position as top global provider and destination for foreign direct investment. SMEs – the EU's economic and social backbone - account for over 99% of all European firms.

These figures are a testimony to Europe's need that its industries become greener and more digital, enhancing their competitiveness on a global level. he EU must take the lead.

At this critical time in the world's history, our focus should be on supporting the industrial sector in way that leads to a resilient, sustainable, zero-pollution circular economy that is also digitalised and retains its competitiveness. All industrial sectors should be contributing to the objective of achieving climate neutrality by 2050 at the latest and ensuring environmental protection as of now. Moreover, a strong industrial base is essential for the success of the green transition that is urgently needed.

I consider the COVID19 recovery as our opportunity to truly embed sustainability in our industrial processes and to accelerate the green transition. This means that the new European Industrial Strategy should be an enabler of a just green transition and it should form an integral part of the European Green Deal, boosting jobs and providing economic opportunities.

I want to see a digital and green transition that ensures sustainability and competitiveness but also a high level of socio-economic well-being of our people whilst reducing inequalities.

We have voted in the European Parliament on a Just Transition Fund which is there to help those workers and communities that are facing challenges due to the transition towards a climate-neutral economy. All Member States should invest in ensuring a just transition, one which ultimately would contribute to the creation of sustainable jobs and the upskilling and reskilling of workers. It is important to keep in mind that, to achieve this, we need to ensure the necessary vocational education and training to help upskill and reskill our workers. This would increase their employability and their capability to adapt to new jobs.

There is an urgent need: that of supporting innovation. Innovation can help us take on board breakthrough technologies. For this to happen, we need to make sure that we avoid and remove unnecessary regulatory burdens in particular for SMEs. This means that in the transition to a green and digital economy, we need to continue advocating for EU funding to be facilitated particularly for SMEs.

There is no argument that the key elements for a resilient and sustainable future are mainly innovation, digitisation and the green transition. If followed through, these would not only redefine economic growth whilst creating new jobs but would be guaranteeing a future on this planet for future generations.

ANGELIKA NIEBLER

MEP (EPP Group),
Member of the ITRE Committee

Giving rise to new European industrial leaders capable of ensuring Europe's **strategic autonomy**

Where we stand today

Since the outbreak of Covid-19, Europe has been operating in a crisis mode. In order to protect the health and lives of our citizens and to prevent the collapse of our health care systems, we have primarily focused on supporting Member States in their fight against the Covid19 virus: Further, we helped to stabilize the economy by providing for financial support and keeping the internal market open, thus guaranteeing the free movement of people and the free flow of goods and services.

However, precautionary measures taken by the European Union as well as by the Member States to prevent further Covid19-spreading, such as countrywide shutdowns or current restrictions like curfews come at an economical cost. The effects of the recession, which Europe is entering at the moment, will still be seen in the years to come even though we have a strong industrial base in Europe. In order to prevent a deepening of the recession, the European Union enacted stimulus packages of unprecedented sizes, the Resilience and Recovery Fond and Next Generation EU programme, the details of which are currently negotiated between the European Parliament and Member States.

Lessons to be learned from the Corona crisis

Covid19 made clear that, to some extent, Europe is heavily dependant on other regions in the world. This is particulary true with regard to specific drugs and digital infrastructure. E.g.: At the beginning of the crisis, we had a shortcut in masks, medical equipment and some drugs. Further, our communication and cloud services were and still are exclusively based on infrastructure from providers outside Europe.

The Commission issued its Communication on a New Industrial Strategy for Europe before the outbreak oft he Corona crisis, thereby analyzing the new and ever-changing geopolitical realities such as global market distortions, protectionism and trade tensions which are having a profound effect on Europe's industry. This analysis is even more true if we look at the experiences made during the crisis. Therefore, the lessons to be drawn from Covid19 are clear: We Europeans have to become more resilient, thus move for strengthening Europe's autonomy without being protectionist.

The Challenge

Strengthening Europe's autonomy is dependent on a strong economy. Europe's way out of the recession should be guided by a clear roadmap, which shows the way to go but allows at the same time for companies to adapt their business models to market needs within the given political framework. Europe is full of talented and creative people in business, industry and academia. Let us give them all the support necessary for them being innovative!

Companies can only take over European and global leadership if politics refrain from detailed regulation but focus on clear goals set for Europe. These are: Empower our talented people, invest in a strong decarbonised industry and take over leadership in digitalisation.

Invest in people and technology

Europe's strength are its talented people! Due to excellent education systems in the Member States, our people are best qualified to invent, create, experiment! Policies should therefore focus on investments in people and technology as we are planning to do with e.g. the new Horizon Europe research programme, the Erasmus progammes etc.

Considering investments, let us focus on SMEs when looking for innovations: All over Europe we have family undertakings, small and medium sized companies which are very close to business and consumers needs. Companies know their markets and are flexible in aligning with specific needs. Our investment policy should therefore reflect these huge potentials!

Making the Green Deal A Success

The Green Deal has set ambitious targets, which could become primary drivers of Europe's economic recovery. New technologies for decarbonisation, the roll-out of green hydrogen and renewable energy should

enable our companies to become leaders in their respective fields.

In order to achieve this, we need to promote the goals of the Green Deal through innovations and incentives, not through bans or strict regulation.

Now, more than ever, we need to ensure that green legislation does not create additional red tape. We need to screen the climate policy measures as to whether they are effective and cost-efficient. This requires, in particular, affordable energy and raw materials. Further, climate policies must be streamlined with our industrial policy and the recovery plans for our economy.

Europe will be in the lead and, thus a global frontrunner, if we create lead markets in clean technologies which are affordable. Only under these circumstances, other regions in the world will follow our way in becoming carbon neutral. We have to show that carbon neutrality works and is not jeopardizing our jobs in Europe and our social welfare system.

Digital Leadership

The pandemic has shown how much we rely on digital technologies in our daily work and communication. Students working remotely and businesses operating in home office mode are the most striking examples.

Strengthening digital technology will play a unique role in Europe's competitiveness and its autonomy in the digital sphere.

In order to compete for global technological leadership with the giants in the US and the state-owned economy in China, Europe as a whole must substantially increase R&D investments and go for the next technological leaps.

Key priorities must be quantum technology, artificial intelligence, machine learning, data science, new energy technologies, smart grids, energy storage, energy efficiency, medicine and health in European networks.

Digital sovereignty also includes a European research data cloud system or a European research data infrastructure. Critical hardware, such as semiconductors and processors, should also be produced in Europe, European cloud services should be available and data should be processed in Europe. All this should be part of Europe's digital agenda. Providing broad access to state-of-the-art digital technology, especially for our SMEs, will be a significant boost for Europe's economy.

Strategic autonomy

Ensuring strategic autonomy is key in this new and changing geopolitical environment. The European Union is an open market, but has to ensure fair competition with foreign competitors and investors. Thus, the White Paper of the Commission on an Instrument on Foreign Subsidies is welcome as we have to address distortive effects caused by foreign sudsidies within the single market. Further, as we rely on free and fair trade with partners all over the world, we should work on strengthening the World Trade Organization which requires some changes in the current structure of the organization.

Summary

Let us suppose that we enable our industry to achieve climate goals with new technologies and digital solutions while ensuring their competitiveness and access to global markets: In that case, I am convinced that Europe has an excellent chance to give rise to new industrial leaders who not only contribute to our European strategic autonomy but who also demonstrate what we Europeans are so proud of: Our values such as freedom, democracy, rule of law and cultural diversity. Yes, we care for the environment and the climate. Yes, we allow everyone to be unique, but we also have to take care of the ones who need our help. That is the European Way of Life.

DIEGO PAVÍA

Chief Executive Officer of EIT InnoEnergy

European Batteries, a Proven Piece of the **Clean Energy Transition**, and a Booster for the Economic Recovery of the Continent

Three years only after the establishment of the European Battery Alliance, the European Union is already outpacing China in terms of investments in electric mobility. In 2019, it has captured 3,5 times more battery related investment than China with a record investment volume of €60bn[1].

The European Union has now found a well-earned place in the **global race towards technological and industrial leadership in the battery value-chain.** We are on the right track, and we have progressed considerably, yet the European Battery Alliance, powered by EIT InnoEnergy, can create 1 million jobs and 200Bn€ of new GDP in the next 30 months if we accelerate.

At the same time, the European Battery Alliance can serve as a blueprint for other strategic industrial value chains, as identified by the European Commission in the Communication on the new Industrial Strategy for Europe in March 2020.

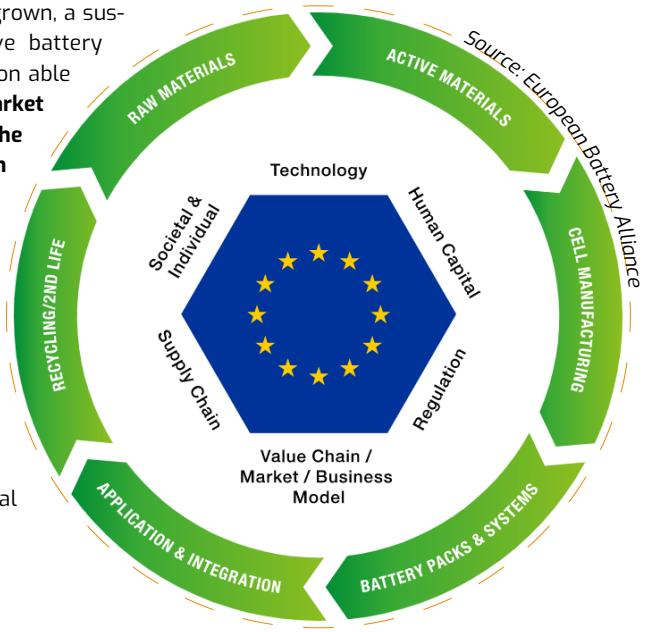
European batteries, an enabler for sustainable growth, are at the heart of the Green Deal

The European Green Deal has set the European Union on the path to climate-neutrality, **with the ambition to pioneer a model of prosperity that would decouple economic growth from, among others, GHG emissions**.

This shift is only feasible if this new model secures our industrial future, with the promise of boosting industrial jobs and the corresponding skills on our territory. It must also contribute to **reducing our vulnerabilities**, primarily our dependence on external players for the most critical bricks of our clean energy transition. This is precisely the aim of the new Industrial Strategy for Europe, which should serve as a compass in designing the next steps of this transition.

In this context, the battery value chain is essential as this technology is **the cornerstone of the decarbonisation of both the transport and power sectors.** These two sectors account together for 58% of the total CO_2 emissions in the European Union in 2020, with the transport sector expected to become the largest contributor to CO_2 emissions as of this date[2]. Batteries also provide the flexibility required for the safe and cost-efficient operation of a power system largely based on renewables, and constitute the core of the drivetrain of electric vehicles, with a prospect of powering about 80% of the total cars stock in the European Union in 2050[3]. **Hence, batteries are a fundamental piece of achieving the clean energy transition.**

The **European Battery Alliance (EBA)**, launched in October 2017 by Vice-President Maroš Šefčovič and powered by EIT InnoEnergy, took up this challenge. The EBA has laid the foundation of, and grown, a sustainable, competitive, innovative battery value-chain in the European Union able to create **a fresh annual new market of 250Bn€ (about the size of the economy of Denmark), which will create up to 4Mn direct and indirect jobs**. Today, above **five hundred organisations** along the entire value-chain have come together within the EBA, delivering already to meet the **rapidly rising demand for batteries** in the European Union, striving to supply state-of-the-art batteries produced with the lowest possible environmental footprint.



1 Source: Transport & Environment (2020)

2 Source: In-Depth Study accompanying the Communication « A Clean Planet for All » (2018)

3 Idem

The European Battery Alliance has already **a strong track record**. It started by focusing on the weakest link of the value-chain, the production of battery cells, and was instrumental in setting up the 26 GWh of manufacturing capacity currently in operations in the European Union. In 2019, Northvolt, which launched works for the construction of two gigafactories for the production of next generation lithium-ion batteries, raised over 1Bn$ and was the first new company from the ecosystem to become a unicorn. In total, the European Battery Alliance has enabled 100Bn€ of investment, while the ecosystem started from scratch. Thanks to such achievements, **the European Union is closing the investment gap with its competitors**, with investment in electric mobility having reached 60Bn€ in 2019 compared to 17Bn€ in China the same year[4].

A lot still needs to be done to seize the full benefits of an integrated European value chain

With nine battery factories under construction, and about thirteen more planned, the focus shifted to the upstream segment of the value-chain with the **ethical sourcing and processing of raw materials**, through domestic extraction and processing of critical raw materials, and to **recycling**. Indeed, **domestic extraction and processing of lithium** (but also graphite and manganese) constitutes an opportunity to address the surge in demand for lithium-ion batteries in the European Union, especially as it is expected to rise by 30% per year in the next ten years, translating in a multiplication of our need in lithium by 18 by 2030 and by 60 by 2050[5]. **To date, the four lithium extraction projects supported by EIT InnoEnergy would be sufficient to cover almost half of the battery ecosystem's needs by 2025**, in addition to generating 2Bn€ of new GDP and creating up to 7000 jobs. The support of the European Commission and the European Investment Bank, as well as the assistance of national and local authorities, is **essential to de-risk these projects, to facilitate the permitting process, and to strengthen public acceptance for mining activities.** Indeed, Europe cannot afford to leave these resources unattended, considering that our standards for mining licenses are among the highest in the world, and that the technologies for sustainable extraction are available. In addition, the upcoming revision of the Batteries Directive will offer an opportunity to settle on ambitious sustainability requirements and to promote recycling to the benefit of consumers and citizens, while boosting the competitiveness of our most innovative companies.

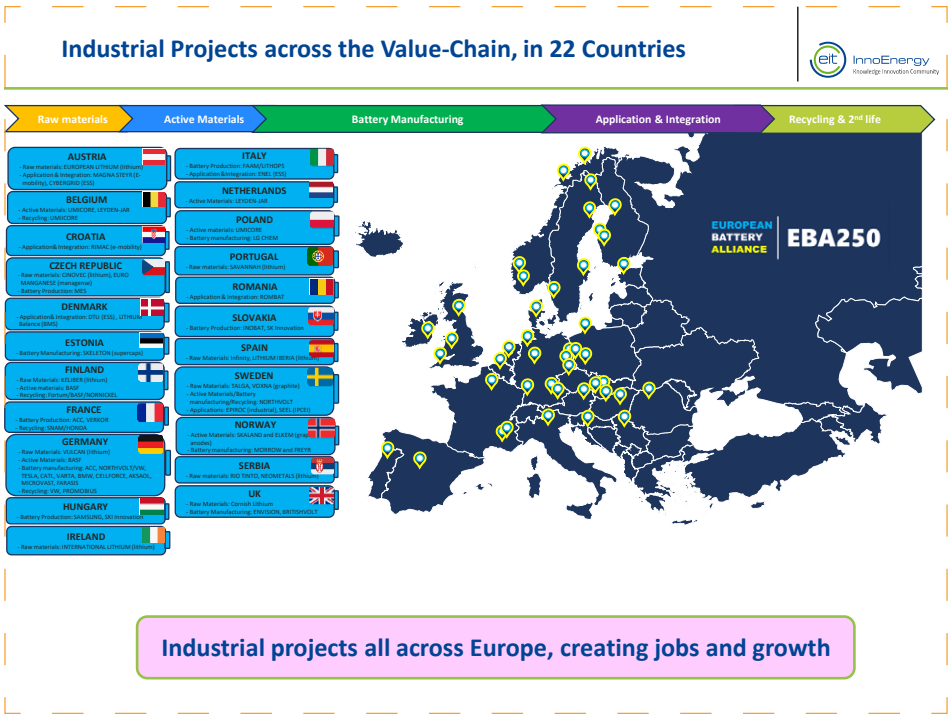
A proven concept, the European Battery Alliance can lead the way for other key strategic industrial value chains in the transition to a low-carbon economy and for the recovery

Indeed, the philosophy of the European Battery Alliance is **fully aligned with the objectives of the Recovery Plan for Europe:** it contributes and will continue to **contribute to the recovery** by leveraging its ecosystem and accelerating its activities. It provides a direct response to the challenges that arose from the crisis, by creating jobs and growth, in the short term. Working together with the stakeholders, we identified in Spring 2020 already, and defined the action plan, that accelerating EBA can create 1Mn jobs and generate 200Bn€ of GDP in the next thirty months, coupled with **ensuring that the recovery is coherent with our climate-neutrality objective.** Therefore, the Member States should be invited to **integrate batteries in their Recovery and Resilience Plans**, possibly under one of the European Flagships, to secure immediate results in their effort to restart their economy, but also long-term benefits for the competitiveness of their industry and the success of their clean energy transition.

These considerations, and the very purpose of the European Battery Alliance, are **more important than ever in the aftermath of the coronavirus pandemic**. The disruption of global supply-chains at the worst of the crisis provided further proof that replacing the dependence of the European Union on (mostly imported) fossil fuels by (also imported) technologies and raw materials puts our economy, and our very ability to achieve the clean energy transition, at risk. Here, our response must be to accelerate the development - or the reshoring - of **resilient industrial value-chains**, able to withstand shocks of such nature, but also of reigniting growth when most needed. The work on identifying the most critical industrial value-chain is well under way, and here again, **the battery ecosystem is a trailblazer**.

Considering the ambition of the Recovery Package, as the European Union and the Member States work on a coordinated response to the economic crisis, there is a lot to gain in adopting measures and supporting projects in the framework of strategic European industrial value-chains. After vetting them against their contributions to an enhanced resilience and to CO_2 emissions reduction, it is clear that prioritising projects with an innovative content will make a lasting difference for Europe's competitiveness, jobs and re-industrialisation.

EIT InnoEnergy is an investor and accelerator in sustainable energy technologies supported by the European Institute for Technology.



Source: European Battery Alliance

4 Source: Transport & Environment (2020)

5 Source: Foresight Study accompanying the Critical Raw Materials Action Plan (2020)

Sustainability is EU's competitive advantage in **battery rivalry**

MIAPETRA KUMPULA-NATRI

MEP (S&D Group),
Member of the ITRE Committee

The Green Deal growth strategy, climate change mitigation and new emission target for Europe are the top priorities at the EU's agenda this autumn. Energy storage and batteries are crucial elements of the green transition. As the renewable energy sources become more and more important, batteries have key role in balancing the grid. The electro-mobility is a key in transforming our transportation sector carbon neutral. Demand for batteries will dramatically increase during the following years as the whole energy system is transforming.

The global state of play is tough in the battery industry. The Europe is aiming to be competitive in the battery market but so does other continents too. Today 84% of batteries are produced in Asia and only 6% in Europe.

However Europe has great potential to come a global player in sustainable battery industry. For example in Finland, there are components needed for the entire battery ecosystem: own raw materials such as cobalt, graphite and lithium as well as actors in refining, processing and manufacturing industry. There are also actors that are experts and global forerunners in battery recycling. At the European level the work has been already started as the Battery Alliance has had big impact on boosting the industry ahead and starting the journey to create competitive battery ecosystem in Europe. Still, we are not using our resources and potential even nearly to maximum.

There are environmental and ethical concerns related to battery production. We need to be sure that the impact of the growing battery industry to the environment and climate is minimal. Minimum sustainability requirements for batteries are in this sense essential in order to make sure that the whole industry is moving to the right direction.

The sustainably sourced raw materials are a key question for European battery industry. Now most of the raw materials are sourced outside the union and are concentrated to few countries. This fact makes the value chains very vulnerable. We need to be able to reduce our dependency from third countries and foster reliable and quality sourcing as there is potential in increasing also locally sourced raw materials in Europe! Also too many mines do not meet with environmental and climate standards nor ILO standards for workers.

However in near future as the demand for battery raw materials increases dramatically, EU still needs to import raw materials from third countries. It is crucial to ensure the transparency of the value chain so we can be sure that the ecological requirements as well as questions related to human and workers' rights have been taken account. EU needs to consider the certification for the sustainably sourced battery raw materials - there are certificates for many other risk raw materials too. Certification requirements could also limit unfair competition from third countries, which do not comply with the European sustainability requirements.

Battery recycling is still in its infancy in Europe. Valuable metals in batteries can be processed and reused. To secure the access to sustainable raw materials, EU needs to take quick steps in the field of recycling. Now big part of the used batteries are recycled outside of the EU and the valuable raw materials leak out of the continent. EU needs to support research and innovation in battery recycling and as legislators, we must require high standards and targets in recycling. To boost the recycling of raw materials, targets for the use of secondary raw materials in battery production should be considered. In addition as recyclability needs to be taken account already in the design phase of the batteries, eco-design directive could be a useful tool for this purpose.

Europe can become an important player in battery industry by creating battery ecosystem based on sustainability requirements and excellence in research and innovation. As the European union counts close to 20 percentage of the world market, it is not a small player, we can certainly lead by example and create, use and require sustainable solutions. We at the policy level can give a great push to this development.

SIRPA PIETIKAINEN

MEP (EPP Group),
Member of the ECON Committee

A Circular Economy Action Plan for strengthening the **industrial autonomy** of Europe

It has been estimated that global demand for resources will triple by 2050, including almost 70% increase in demand for food, feed and fibre. We already consume over 1.5 globes worth of resources every single year, and following the estimates, would need more than three planets full of resources to satisfy the demand by 2050 under business as usual scenario. There are however limits to growth—we only have one planet.

Europe is extremely dependent on imported raw materials and energy, much more so than many of our competitors: 40% of all material used in the European Union is imported, and for some strategic resources, the percentage is even higher. Furthermore, this dependency on imported raw materials is highly concentrated. For example, with the growing amount of electric vehicles and energy storage, the demand for lithium is expected to be 60 times higher by 2050.

Resource scarcity increases prices. Almost 90% of European companies expect their material input prices to continue rising, according to a Eurobarometer survey. With raw materials running short, Europe is either going to be hit the hardest by resource scarcity or benefit the most from resource use efficiency.

EU has worked on circular economy and resource efficiency for already a decade to tackle this dependency and secure our critical raw material supply. Commission has recently published an Action Plan on Critical Raw Materials. Commission proposes actions to reduce dependency inter alia through circularity in the use of resources as well as via strengthening the sourcing of raw materials in the EU.

If we look at these facts, it is clear that European economies cannot survive—let alone grow and prosper—unless we take some radical steps to increase our resource efficiency and move towards a true circular economy. We have to stop wasting precious resources and start using them more efficiently.

In this challenge, there also lies a huge opportunity. The one, who can deliver solutions for the resource efficiency dilemma, is also the winner of the race: this means solving the problem of doing more with less—creating more added value with less resources. I have argued that we ultimately need to increase our efficiency by "factor 10": we need to be able to create the same level of well-being with a tenth of the resources we use now.

In circular economy, there is no waste, products are designed to be durable, upgradeable, repairable, reusable and recyclable at the highest level possible. In the end of their life, they will become raw material for something else. This same goes with critical raw materials.

Furthermore, circular economy has the potential to increase the EU's GDP by an additional 0.5 % and create around 700 000 new jobs by 2030.

In the new circular economy action plan, we will need to support this change. Currently most of the legislation is created to support the linear "take-make-dispose" economy. We need regulation that supports real circular economy. Regulation is never neutral. Legislation is one of the essential drivers of the business revolution, as businesses and investors alike need a stable and predictable regulatory environment in order to change.

We need to set the ambition level right and it should be based on science and back casting. This would mean at least 10-fold resource efficiency. We need to set up binding targets, based on harmonised indicators. To achieve this change the focus needs to shift from recycling to "designing out waste", so that the products and packaging placed on EU market is always upgradable, reusable, reparable and recyclable. This could be done through broadening the scope of the Ecodesign directive.

Chemical recycling: a contribution to the EU strategic industrial autonomy

JEAN HORNAIN
CEO of CITEO

Citeo, the French company in charge of Extended Producer Responsibility (EPR) for household packaging and graphic papers, fully supports the efforts to develop new complementary recycling technologies, among which chemical recycling, as a solution to accelerate the circular economy and the EU strategic industrial autonomy

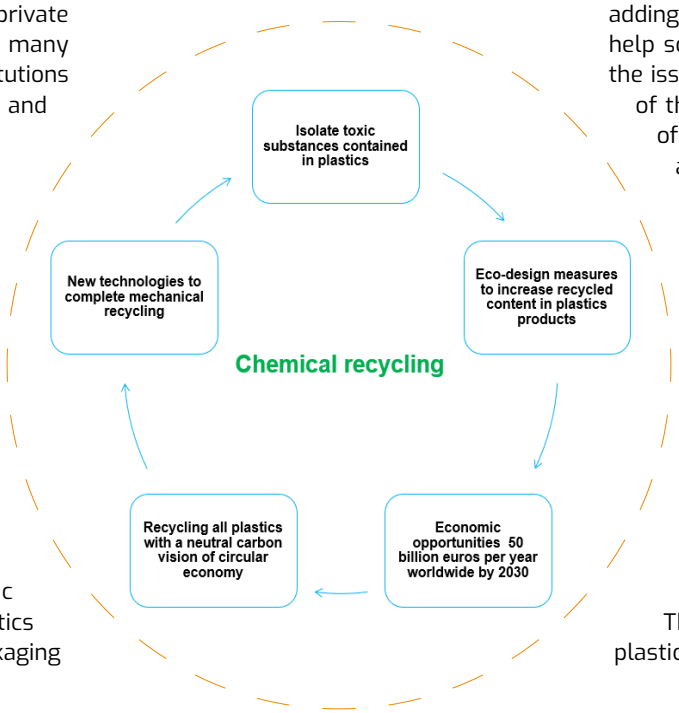
Global plastics production has surged over the past 50 years, from 15 million tonnes in 1964 to 350 million tonnes in 2019 and is expected to double again over the next 20 years. Rapid production growth combined with low collection rates and on-going technical and economic barriers to plastics recycling have made plastics a global issue.

Pollution caused by the accumulation of plastic waste and its leakage into the environment is the most concerning environmental problem in many countries and has drawn the attention of public and private actors worldwide. In recent years, many governments and international institutions have set ambitious waste reduction and recycling targets.

The European Commission has now accelerated the movement to close the loop through the new Circular Economy Action Plan, under the EU Green Deal, with a main focus on plastics and packaging; and the EU recovery plan with a specific national contribution on non-recycled plastics packaging. The proposed measures, both at the national and European levels, include several that are directly related to the recycling of plastic packaging: limiting single-use plastics with the aim of 100% of plastic packaging being reusable and recyclable by 2030, promoting eco-design and stimulating technological innovation, and developing international standards for the sorting and recycling of plastics.

As part of this growing trend, France recently implemented additional measures to increase recycling of materials and limit single-use plastics under its act of law against waste and for a circular economy.

This general movement is driving the transition from the linear "produce, consume, throw away" model to a circular model in which plastic waste is diverted from landfills and oceans and fed back into the economy through already existing or nascent recycling technologies, such as producing recovered feedstock. To ensure the full potential of this transition is realised is, however, dependent on technological breakthroughs and greater cooperation between actors in the plastics value chain.



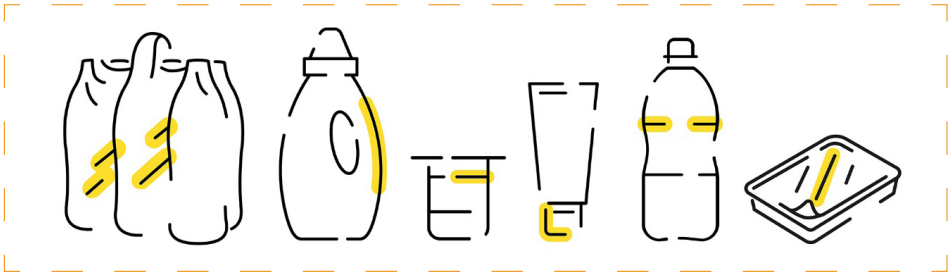
The need to promote new solutions to recycle plastics

Plastics waste is hurting the environment when it is not sorted efficiently. In this perspective, all over the world, governments and international organisations are making known their desire to increase the plastic recycling rate in an effort to end the pollution caused by plastic waste, especially in our seas. And businesses are right there with them: today, many companies publicise their desire to use recyclable and recycled plastics in their packaging. These voluntary statements provide a direction, but we still need to find the right path, because plastic is not like other materials

Chemical players, the suppliers of plastic raw materials, as well as waste managers, recyclers, brand owners, and others are adding a new dimension to the industry to help solve the waste problem and tackle the issue at its very core. Being a product of the oil industry, plastic is composed of molecules of organic polymers that are not as easy to recycle as metals, for example. Made up of several resins, it is also commonly combined with additives and fillers that make packaging more useful, but which also complicate the recycling process. And ultimately, once used, plastic packaging can be left dirty by the products it served to protect. For all type of resin expect clear PET, mechanical recycling cannot reach food contact grade for recyclates.

These different constraints make plastic recycling an industrial challenge.

The technological leap may come from research and development in polymers (depolymerisation, dissolution, distillation, purification, repolymerisation, etc.), or even biology (enzymatic depolymerisation). These processes are collectively referred to as "Chemical Recycling" Indeed, these are the fields in which we have seen numerous new projects over the past decade, several of which are now entering the industrial phase.



Citeo's key role to promote new solutions to recycle plastics

These new technologies are the central theme of the Plastic Solutions Forum that Citeo has organised on the 5th & 6th October 2020. Complementing current recycling processes, they can accelerate plastic's transition into a circular economy, thereby helping to conserve our resources and protect our environment.

Furthermore, as part of Citeo's call for projects to promote eco-design and recycling and recovery projects for plastic and paper in France, leading international energy company Total, plastic recycling technology provider, and global brands such as Nestlé and Mars today joined forces to develop an innovative industrial chemical recycling industry in France.

The first-of-a-kind consortium of world-leading players from across the plastic packaging value chain will examine the technical and economic feasibility of recycling complex plastic waste, such as small, flexible and multi-layered food-grade packaging or for made of polystyrene packaging. These products are currently considered non-recyclable and are therefore either incinerated or disposed of in landfills.

Those ambitious projects meet Citeo's overarching goal of finding end-to-end solutions for all packaging. New recycling technologies, such as chemical recycling, will take plastic performance to the next level and accelerate the circular economy for post-consumer plastic waste, especially when it is complex. Especially by addressing the circular economy challenges of food-grade plastics, chemical recycling is complementary to the existing mechanical recycling activities.

The need for political action

Recycled plastics are currently seen as worthless by most manufacturers who prefer higher-grade virgin materials. Since those also happen to be cheaper and less likely to be contaminated by legacy substances, Europe's recycled plastics can often end up in poor value products at best or in landfills or in incineration plants when they are not shipped abroad.

This is where "chemical recycling" comes in. The technique holds the promise to tackling some of the most difficult challenges of current recycling efforts in Europe. Plastic is and remains a key element of our everyday life and has a number of benefits for society as well as the environment if waste management issues are addressed successfully. In this perspective, a life-cycle approach needs to be followed in order to consider all the possible benefits and risks of this new approach, including on climate.

Concretely, chemical recycling should be able to isolate toxic substances contained in plastics, which are now banned in Europe, making it possible to retrieve feedstocks that can be used to manufacture products which are as good as new. Questions remain and must be answered like the efficiency of the process, the economy, the way to address the recycling rate through the mass balance approach, environmental impact but the opportunity in such chemical technologies, in contrast to mechanical ones, is that they generate virgin-grade feedstock which can then be used to make new materials and chemicals of virgin-grade quality, ensuring a circular loop of plastics and competitivity between virgin and secondary raw materials.

In this regard, the European Commission should work on aligning existing regulations and legislations on chemicals, waste and products in order to guarantee that products and packaging are exempted from substances of concerns, in line with the Commission's Chemicals Strategy for Sustainability that will be published soon.

Finally, such solutions, to complement mechanical recycling and reach EU targets on plastics and on its autonomy, could represent a profit pool of nearly 50 billion euros per year worldwide by 2030 according to McKinsey. The true potential for chemical recycling to become profitable depends on the sufficient supply of suitable plastic feedstock, and the further development of pyrolysis and gasification technologies to produce high volumes of recycled plastics with consistent quality at a competitive price. But reaching that potential also depends on conducive regulatory framework. This is why the European Commission needs to address further incentives and regulatory measures to increase the recyclability of plastics and make it a valuable resource, in line with the targets of the Critical Raw Materials Strategy and the upcoming Chemicals Strategy for Sustainability.

Hydrogen, the key to decarbonising our industry: the example of **energy-intensive sectors**

JORGO CHATZIMARKAKIS

Secertary General of Hydrogen Europe

State of the Union in 2020: Commission President Ursula von der Leyen explains how the EU can combine the recovery from the pandemic with the conviction to transform the economy towards net-zero emission by 2050 or even earlier. One of the technologies mentioned is the use of clean hydrogen for the steel production. Indeed, the Commission paved the way for the use of clean hydrogen in the energy-intensive sectors. If we would look back on the summer of 2020 in the year 2050, then the historical dimension of the energy policy decisions for the energy sector becomes more than clear: The EU and many Member States have each worked on a hydrogen strategy and finally got it off the ground. With this, Europe has set itself ambitious goals: by 2024 the EU wants to deliver one million tons of renewable hydrogen, by 2030 the target is 10 million tons of renewable hydrogen. In order to get there we need to kick off and to start implementing very soon, as 2024 is round the corner and is within the mandate of the current Commission of Ursula von der Leyen. It is remarkable that this kind of self engagement has been decided by the European Commission putting pressure not only on the political decision makers but also on the respective industries.

After many years of being considered as a science-fiction fantasy or a niche technology, hydrogen has finally reached the mainstream. Not only are many EU Member States building their long-term climate strategy around hydrogen, but they are also considering it to be a key missing link between different energy sectors. Alongside them, the European Commission has realised the important role hydrogen can play in the energy transition towards a net zero society. This was showcased on 8 July 2020 – a historical day in this respect – as the Commission published its "Powering a climate neutral economy: An EU Strategy for Energy System Integration" and the accompanying communication "A hydrogen strategy for a climate-neutral Europe". The fact that the European Commission has decided to present a dedicated communication on a hydrogen strategy is testament to the commitment for systemic change away from fossil fuels, and towards electricity and hydrogen in order to achieve the EU's 2030 and 2050 climate targets. In addition to the Hydrogen Strategy, the energy systems integration package already contains many elements of how to use hydrogen in order to couple the power and the gas grids, boosting the new hydrogen reality.

In this framework, the industry understands the catalytic role of the COVID-19 crisis and the many possibilities of the post-corona recovery ambition. As climate effects worsen – as seen in the ongoing hot summers and their dramatic consequences – we need to become faster in achieving the Paris Agreement goals. For this reasons, more than 110 CEOs signed a letter to the European Commission underlining their clear readiness and ambition to act on the basis of a blueprint that has been built on the vision of a 2×40 GW electrolyser initiative, putting hydrogen at the heart of renewable energy before 2030. Of that, 40 GW will be within the EU and another 40 GW outside in the neighboring regions of Ukraine and Northern Africa. This ambition has already become a guiding principle for many industries, leading to clear announcements such as the NortH2 project with an investment of €15 billion over the next 10 years to build up a capacity of 10 GW in the North Sea, with corresponding electrolysers onshore and offshore.

The project pipeline required for this is to be established by the end of this year. The instrument foreseen for the implementation of the strategy is the European Clean Hydrogen Alliance (ECH2A), which will create the necessary framework for this. There is no doubt: Green hydrogen is the focus of all efforts to achieve the desired CO_2 neutrality in 2050. It is to be foreseen that a new category will be born, the so called "HydroGenewables" being produced directly at the source of the renewable energy and being transported cheaply via a European hydrogen backbone to the sites of demand, starting from the chemical and the steel industry. The use of clean hydrogen in the energy-intensive sectors and industries is the low hanging fruit that can lead to immediate use of it as a chemical feedstock. So it's these sectors that can help overcome the famous "chicken and egg dilemma" immediately and hence kick-off the transition into the net-zero emission era.

Following this trajectory the EU will be the starting point for the development of clean hydrogen as a global commodity, denominated in Euro rather than any other currency. The world is watching, and we have the opportunity to promote a disruptive industrial revolution that will create new value chains, jobs and boost EU competitiveness globally while promoting and supporting sustainable development goals. With a view to future legislative initiatives, the EU should strive to develop a blueprint for a hydrogen market design that can be replicated by other geographies. In doing this, Europe will become the birthplace of the global hydrogen economy, forming the foundations for a globally traded market.

The vision for increased *HydroGenewables* has become concrete – the path is now clear for Europe to realise its hydrogen future.

Credit is "NEOS"

Increasing Europe's **Energy Autonomy**: Offshore Renewable Energy and Energy Storage

CLAUDIA GAMON

MEP, (Renew Europe Group), Member of the Committee on the Environment, Public Health and Food Safety

The past two years have undoubtedly brought special attention to the energy sector among the European public, which was perhaps last seen during the industrial revolution. Starting with the initiative of Greta Thunberg in 2018, public awareness about climate change increased dramatically. This also forced EU officials into dealing with this issue and providing rapid solutions. Consequently, Commission President Ursula von der Leyen addressed this need in her speech on the State of the Union setting the goal of cutting EU CO_2 emissions by 55% until 2030 and eventually becoming the first climate-neutral continent by 2050. At the same time, she pointed to another important strategic issue, the reduction of our energy import dependency. Today, more than half of the EU's energy needs is met via net imports – with Russia being the Union's major supplier. In light of the recent sanctions against Russia, energy autonomy has become a geostrategic challenge.

Meeting the two goals of reducing CO_2 emissions and developing energy autonomy, fortunately, is not mutually exclusive, but rather complementary. Both can only be achieved by a substantial boost in renewable infrastructure such as photovoltaic and wind parks. In this respect, I welcome the European Commission's roadmap on offshore renewable energy with the aim of developing a plan to access the vast latent potential of floating wind, wave, or tide. According to the Commission, there is a potential of more than 250 GW in installing offshore wind parks from the Black Sea to the Atlantic Ocean. One prime example is the upcoming Ijmuiden Ver wind farm about 80 kilometres off the Dutch coast. In this respect, I also want to highlight the importance of incorporating all relevant stakeholders in such planning processes in order to arrive at a satisfying solution for everybody.Without successful citizen participation, local resistance can become a major obstacle. Another important factor is close cooperation between the member states to ensure a coordinated planning of cross-border offshore electricity grids and onshore landing points.

Renewable energy, however, creates a special challenge for the European energy supply. Power generation is complex to control. A higher share of renewable energy sources inevitably leads to higher volatility in the electricity grid. At the same time, our utmost priority is to secure constant and affordable electricity supply at all times. In order to achieve this, a massive increase of energy storage capacity is needed. This allows us to equalise peaks and lows in supply and demand and, thereby, help to avoid extreme electricity prices. Aside from a general increase in storage capacity, it is also crucial to implement a broad range of storage technologies to secure not only short-term storage but also seasonal storage over months. Unfortunately, the latest advancements of national governments such as Germany and Austria on targeting net-zero carbon emissions barely acknowledge the full potential of energy storage.

In its recently adopted own-initiative report on energy storage, the European Parliament calls for a comprehensive strategy on energy storage – particularly in light of the existing regulatory barriers. A crucial element is abolishing double taxation and network charges in the upcoming revision of the Energy Taxation directive as this deteriorates market access considerably. Likewise, the revision of the TEN-E regulation must solve the problem that some PCI projects significantly exceed their PCI approval periods. Additionally, storage projects should be included as candidates receiving PCI status. Lastly, there is still a lack of clarity in state aid guidelines for storage projects, which hampers the development of technologies that are not yet market-ready. We also call for an appropriate revision here.

The European Parliament is convinced that different storage technologies will play a role in contributing to the goals we set out. Hence, we need to foster the development of different kinds of storage technologies and tie them to our high environmental and social standards. Consequently, the Commission should set up a task force that carries out an extensive analysis of each storage technology concerning its life cycle and CO_2-footprint. This should serve as a basis for granting state aid. The European Parliament also recommends restricting state aid to early-stage technologies and cut the funding once these projects become commercial.

In conclusion, I want to highlight that the Commission's plan to boost investment in (offshore) renewable infrastructure is a step forward in achieving both net-zero emissions by 2050 and increased energy autonomy. At the same time, it needs to be accompanied by an equivalent expansion of storage facilities and technologies to guarantee a steady supply.

Green Hydrogen – Chances and Challenges for a competitive, sustainable transport sector?

JAN-CHRISTOPH **OETJEN**

MEP (Renew Europe Group), Vice Chair of TRAN Committee

As Vice Chair of the European's Parliament Transport & Tourism Committee I am committed to supporting an efficient, intermodal, and sustainable European transport system. Mobility means to me lived freedom; a value that always needs to be maintained. By 2050, the European Union wants to be climate neutral, which means a European economy without net-zero gas emissions. This objective is at the heart of the Green Deal and in line with the EU's commitment to global climate action under the Paris Agreement. Hydrogen is a promising future and a key building block towards a climate-neutral and zero pollution economy in 2050.

In Europe and around the world, public attention on hydrogen has been growing significantly for the past few months. One driver has been the European Commission's hydrogen strategy for a climate-neutral Europe, released in July 2020. This roadmap foresees hydrogen as an intrinsic part of an integrated EU energy system with a strategic objective to install at least 40 GW of renewable hydrogen electrolysers by 2030 and to produce up to 10million tonnes of renewable hydrogen in the EU by the same year. Moreover, almost all Member States included hydrogen in their alternative fuels infrastructure national policy frameworks, with some already adopting national strategies on hydrogen. Hydrogen technology is *en vogue*.

There is a chance to boost research and innovation, to maintain and to extend Europe's technical leadership by deploying more production and applications of green hydrogen. The economic effects will be felt through economic growth and an increase in the number of jobs across the entire value chain.

When people talk about hydrogen, they usually talk about so called green hydrogen. CO_2 free Hydrogen, that is generated from renewable energies in a climate-neutral manner. Within my mandate as Member of European Parliament I highly support pushing green hydrogen as an element of future emission-free mobility and for its vital role in the European Union's energy mix.

After EEA, in 2017, 27% of total EU-28 GHG emissions came from the transport sector (excluding 22% of international aviation and maritime emissions) - a significant increase in the last decade. In order to reach Europe's climate targets by 2050, the transport sector must cut GHG emissions by two-thirds, compared with its level in 1990. This ambitious target can only be realized by acting now, speeding up the deployment of low and zero-emission alternative energy for transport, moving towards zero-emission vehicles and by increasing the efficiency of the transport system overall.

The advantages of hydrogen are clear, it has diverse forms of application. It can be used as feedstock, as a fuel or as an energy carrier and storage. Within the transition of electricity production to renewable energy sources and reduction of GHG emissions, hydrogen has the potential to create added value across industries and sectors. The roadmap of the Commission's Hydrogen Strategy aims to increase the share of hydrogen in the European Union's energy mix from 2% today to 13-14% by 2050.

I am convinced that mobility and transport is the first and most important large-scale industries in which hydrogen can be applied. The first electric vehicles with hydrogen and fuel cell drives are already on the market and with respect to the Alternative Fuels Infrastructure Directive the European network of hydrogen filling stations is growing. Its revision should make hydrogen

a mandatory fuel on the list for all transport modes and to enable synergies between the Trans-European Transport Network (TEN-T) and the Trans-European Energy Network (TEN-E). In order to reach a high coverage of refuelling options, considering specificities of infrastructure for heavy-duty vehicles, the European Union urgently needs to adopt a regulatory framework and common technical standards, which can enable interoperability. An increasingly denser network of filling stations would open up a broader application of hydrogen fuel cell mobility, also with regard to the combustion of (green) hydrogen in conventional internal combustion engines. Emission-free trains with hydrogen fuel cell drive, such as the Almstom Coradia iLint, have been developed and are already being used in regular operation. Airbus recently presented its ambitions to develop the world's first zero-emission commercial aircraft by 2035, using hydrogen propulsion. As an alternative or in addition to this, a significant reduction in CO_2 can already be achieved in conventional fuel production by adding green hydrogen, comparable to adding biofuels.

So far, the switch of road users from previous combustion engines to electric vehicles with battery technology has largely failed. This is due to the fact that most passenger cars currently available on the market, do not reach desired ranges . This is especially the case for heavy duty vehicles and on long-haul routes. The options for quickly charging purely battery-electric vehicles are also already being discussed, particularly for private use. Hydrogen here, can play a crucial role. Its greening effects and increased availability can help to significantly accelerate a switch to low-emission vehicles in the private sector by to meeting the mobility needs of citizens.

The answer is clear: green hydrogen energy will become a significant pillar of the EU's future energy system, and is able to reach our ambitious climate-targets. Its varietal usage and numerous possible applications in the transport, industry and the housing sector, will pave the way for decarbonisation. What is key now, is the phased implementation of the European hydrogen strategy. There needs to be a competitive European market for green hydrogen. For this the correct investments in green hydrogen infrastructure and research and development must be made available. Green hydrogen must become a budget priority in programs such as the MFR, Next-GenerationEU and the Recovery & Resilience Facility. The European regulatory framework needs to take a look at the interplay between its economic, industrial and energy policy. I will ensure that European politics do not focus on one single technology, but that all upcoming future legislative proposals stay open to any form of technology and future innovations.

FRANÇOIS-RÉGIS
MOUTON de LOSTALOT-LASSALLE
IOGP, Regional Director Europe

Large-scale decarbonisation solutions for a **climate neutral industry** and jobs in Europe

Last July, under the joint Franco-German impetus, the European Union reached a historic agreement around an unprecedented € 750 billion stimulus plan based on solidarity and common debt. This has 3 objectives: convergence, resilience, and transformation. In other words, to paraphrase the President of the European Council Charles Michel, it is for Europe to "repair the damage caused by the COVID-19 crisis, to reform our economies, and to define new models of societies."

Moreover, the objective of climate neutrality by 2050 is therefore no longer seen as a constraint for the European Commission, but rather as an opportunity; if Europe needed a second breath, this stimulus package combined with global climate leadership seems like a chance to revive growth and the economy. Europe therefore needs to make choices whose impact will be felt on its economy and society for decades to come.

Thus, the legislative proposals made within the framework of the European Green Deal - now integrated in a way into this recovery plan – over the course of 2021 will aim to direct this capital and this financial support towards small and highly targeted sectors.

So far, energy transition efforts have mainly focused on decarbonizing the electricity generation sector through the development of renewables. However, approximately 2/3rd of EU CO_2 emissions come from power and heat plants, industrial sites and waste management installations. The challenge remains therefore huge from a climate point of view. What Europe needs to do now, is turn this challenge into an opportunity.

And this is where the oil & gas industry comes in. To support the transition to climate neutrality by 2050, the efforts of our sector focus on 3 axes: the reduction of our own operational emissions, the supply of less carbon-intensive energy, and the deployment of large scale greenhouse gas reduction solutions. Here, I'll focus on the latter two.

The future needs of Industry on a 2050 climate neutrality pathway:

Among the future needs of European Industry, two are fundamental for the future of the most energy-intensive and GHG-emitting industrial sectors: access to increasingly lower-carbon energy, and a solution for residual GHGs emissions.

1. Access to cleaner energy:

Today, the role of natural gas is mainly to i) cut emissions by half when replacing coal in power generation and ii) facilitate the integration of intermittent renewables. This is well-understood; and our sector is embarking now on the production and distribution of hydrogen for tomorrow's needs.

From the local deployment of electrolysers to the launch of large scale projects in major European industrial hubs, our companies are accelerating the deployment of "green" (renewable-based) hydrogen, and "blue" hydrogen, produced via the decarbonisation (steam reforming) of natural gas with storage of the produced CO_2. By simply retrofitting the existing gas-based hydrogen production (which today accounts for 70% of dedicated hydrogen production globally) with CCS, we can already achieve huge emission reductions. And the same CCS infrastructure can be used to capture residual industrial emissions.

The Hydrogen Strategy published this summer by the European Commission demonstrated the importance EU policymakers now give to this versatile and promising energy vector. However, by setting extremely ambitious objectives while relying almost entirely on the deployment of electrolysers running on green electricity and green hydrogen imports, this strategy takes a considerable risk, trapped, once again, by the temptation of "picking winners".

We call for a more inclusive approach capitalizing on the modernization of the existing production of hydrogen from natural gas, on the optimal use of the know-how and geological capacities of our sector and continent, and on leveraging from the existing dense gas network in Europe. By putting all its eggs in a single "green hydrogen basket" whose rate of development is and will remain insufficient on its own, Europe risks falling short of the volumes needed to give its heavy industry a chance in the future.

2. Finding a solution for residual GHG emissions:

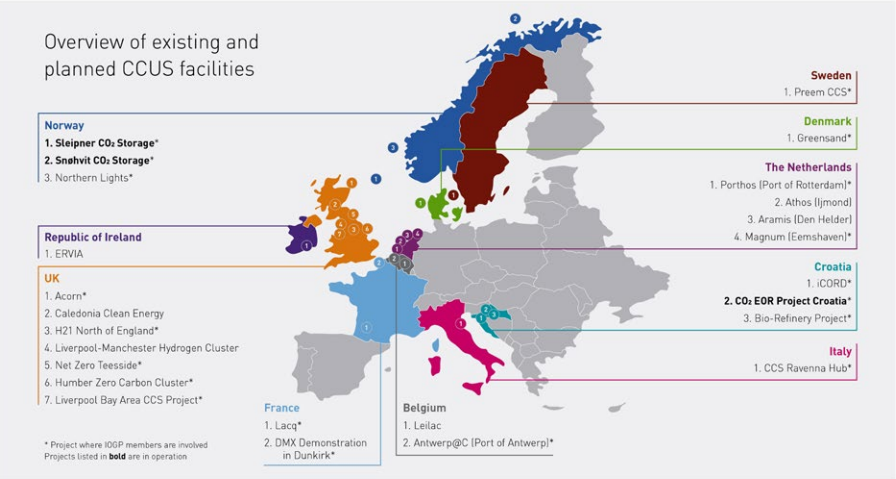
As recently underlined by the IEA[1], we cannot achieve climate neutrality by 2050 without CCS. Period.

We therefore call on European leaders to really start supporting the deployment of Carbon Capture and Storage (CCS) both politically and financially, today. Tomorrow will be too late. This proven technology has existed for thirty years in Europe. Nearly 25 projects are being deployed on our continent, many of them around industrial hubs where economies of scale are evident. But this still isn't enough: we need a proper Strategy for CCS deployment, backed up by political vision and will.

According to a 2018 report by Endrava and Carbon Limits, emissions from power and heat plants, industrial sites and waste management installations in Europe amounted to 2.4Gt/CO_2, accounting for 2/3rd of all EU CO_2 emissions (around 3.8 Gt CO_2). Within these 2/3rd, 89% come from the installations emitting more than 100 ktCO_2/year, which represent only 32% of total installations. This means that decarbonising the larger installations is key, while the bulk of Europe's energy sector emissions are from

1 CCUS in Clean Energy Transitions, IEA 2020

CCUS projects in Europe



Source : IOGP: https://www.oilandgaseurope.org/news/map-of-eu-ccs-projects/

sources located in relatively close vicinity to potential storage site, allowing CO_2 to be efficiently captured and transported there. In Europe, there is an estimated 300 $GtCO_2$ of storage capacity, although part of this has been restricted by some Member States.

Under this approach, risks, investments and support mechanisms can be better spread across the CCS value chain. In doing so, industrial installations, gas infrastructure companies, upstream E&P companies, can have clear and coordinated roles for delivering and being compensated for capture, transport and storage activities. The shared approach to the transport and storage infrastructure also creates economies of scale, driving down unit costs for the CCS value chain.

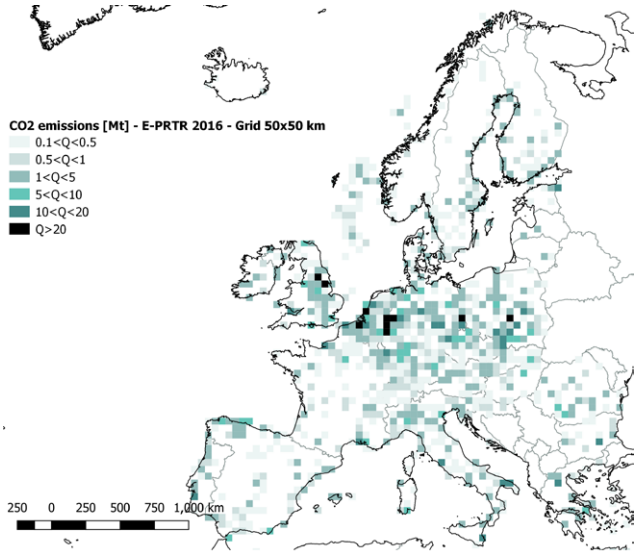
Europe has all it needs to successfully deploy CCS, but it still lacks political vision and support. CCS is not only a climate tool but also an industrial one: The European industry must rally around CCS to make sure it is not forced to leave the EU. CCS can keep our industry and jobs at home, while storing emissions underground forever.

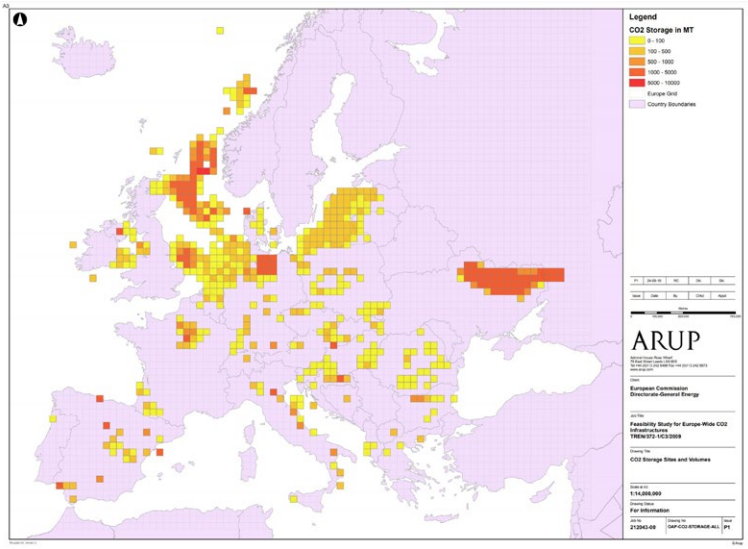
This is why CCS must be an integral part of Europe's Industrial Strategy. Failure to act now means taking the risk of being deprived of solutions for the future. CCS is a strategic, industrial and sovereignty issue: we cannot get it wrong this time and like we did with solar panels, tech, and many other innovative solutions we failed to deploy despite great European ideas!

The Commission is aware of this risk. It recognizes it but remains cautious of a technology that has long been criticised, in particular by environmental activists who are perfectly aware of its potential and yet dismiss it as a lifeline for fossil fuels. It is a dangerous caricature that must be rejected, and this can only be done with the mobilisation of all sectors concerned, until policymakers finally take action.

As mentioned in the Energy System Integration Strategy, within the framework of the "Clean Energy Industrial Forum" already in place, we call for the launch of a "CCUS Forum". With all the resources and knowledge available in Europe, the Forum would provide with a holistic view on the role of CCUS from a technological and economic perspective, to a societal and regulatory one. Its purpose would be to bring together actors of the private and public sector to draw a common vision for CCUS in Europe, identify political and regulatory barriers to its development, and work together on a European plan for a full-scale deployment of CCUS projects by 2030. The CO_2 volume of CCS projects currently under planning amounts in total to between 30 and 60 $MtCO_2$ before 2030. However, the current level of carbon pricing (ETS and taxation), without new financial support schemes, falls way short of being adequate to secure the necessary level of investment decisions in CCS projects.

In a climate constrained world, if we are first movers on large-scale CCS value chains, we can not only keep our industries and jobs, but also expect to bring industries back to Europe. The CCUS Forum is an opportunity for Europe to take such an initiative, and open up new leadership perspectives. The European Industry deserves this. Let's seize this opportunity together!





CO_2 emission clusters and CO_2 storage capacity in Europe
Source (left) Carbon limits, adapted from Endrava (2018) Potential for CCS in Europe
Source (right) https://ec.europa.eu/energy/sites/ener/files/documents/2010_10_co2_infrastructures.pdf

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Strengthening European resilience in the manufacturing and **supply of medicines**

PHILIPPE LUSCAN

Executive Vice President, Global Industrial Affairs, Sanofi

The COVID-19 crisis has brought many long-standing questions about pandemic response to the fore across all sectors. For the pharmaceutical industry, it has put the capacity of systems to supply essential medicines and vaccines under enormous pressure. One of the most important lessons learned is that Europe must strengthen its manufacturing capacity and supply of strategic assets, such that critical products are available at all times to secure the health of its population. While European Commission President Ursula von der Leyen called for a stronger "European Health Union" in her State of the Union speech to the European Parliament on September 16, the European Council conclusions of October 1-2 stressed that "Achieving strategic autonomy while preserving an open economy is a key objective of the Union".

Strategic autonomy is really about mobilizing resources so that the region does not uniquely depend on the decisions and assets of others. It should enable Europe to shape economic and political power through its global industrial competitiveness.

Sanofi has a unique position in Europe. We are a global pharmaceutical company with a robust R&D footprint and a uniquely diversified industrial network throughout the world -with expertise in the production of Active Pharmaceutical Ingredients (APIs), medicines and vaccines-, a strong European heritage, and headquarters in France. Europe is home to 35 of our 69 industrial sites and six of our 18 distribution centers, and the internal expertise of our full value chain, from manufacturing to supply, is a core part of our company identity.

As the largest pharmaceutical company headquartered in the European Union, Sanofi is well placed to help support Europe's industrial strategy and autonomy. Based on our company's recent experiences, we have identified three priorities to achieve this goal.

1 - Strengthen Europe's health autonomy through increasing regional manufacturing and supply capacity

The pandemic has amplified the call for stronger European capacity to secure supply and safe access to essential medicines for all patients. In this regard, the crisis has underscored the effectiveness of Sanofi's core strengths, for example its sustainable approach to industrial strategy.

Sanofi's production sites are located around the world, in more than 30 different countries,

Frankfurt BioCampus, Germany *– State-of-the-art bioreactor for the production of therapeutic antibodies - © Sanofi*

linked to local and regional ecosystems, and wholly integrated. While our European facilities produce medicines and vaccines primarily for Europe and our Asian facilities primarily for Asia, we have the capacity to supply other regions and the flexibility and adaptability required to weather any crisis. Our model demonstrates that leveraging regional "sovereignty" without compromising the smooth functioning of global supply chains is key to reinforcing European industry.

Almost 70% of our APIs are produced in Europe. Maintaining 35 sites in Europe has been a strategic choice which had a double 'cost' for Sanofi: compliance with high standards and regulations, and challenging pricing decreases. Governmental measures have contributed to pharmaceutical disinvestment in Europe, which had short-term benefits but, 15 years later, appears to be challenging for European health autonomy, with India closing borders and supply disruptions in China.

In February 2020, Sanofi stepped up its efforts to balance the heavy reliance of European-based industry on APIs sourced from Asia. While it is unrelated to COVID-19, we announced our decision to create a leading European company dedicated to the production and marketing to third parties of APIs. Headquartered in France, the new standalone company will combine our API commercial and development activities with six of our European production sites, located in Italy, Germany, the UK, Hungary and France. The new company will produce APIs for Sanofi, with the goal of expanding sales to other pharmaceutical companies in future. This is one approach to strengthening API manufacturing and supply capacities, commensurate with regional needs. The company is also working on an APIs catalog and will play a strategic role there. We do not consider that

everything that went to China and India must be repatriated to Europe. Yet, spreading out the production of these ingredients so they are less concentrated in China and India is critical for meeting the needs of patients in Europe and beyond.

The resilience of Europe's pharmaceutical industry and, by extension, its public health, demands a detailed understanding of its manufacturing dependencies. Manufacturing capacity must be increased strategically, based on a comprehensive list of priority APIs and medicines and where they are currently produced. In addition, while investment in new manufacturing efforts in Europe will contribute to regional resilience, new access and procurement approaches are needed to create the right financial incentives to invest in manufacturing in Europe. The location of production has an impact on cost and will need to be considered in pricing medicines.

Ultimately, adequate incentives, regulatory and financial measures should support production capacity in Europe to facilitate the supply and avoid shortages of critical medicines. This applies to the manufacturing of APIs but also to the biotechnology transformation. To achieve more health autonomy, Europe must be strong in all areas: the production of chemistry-based drugs, vaccines and cutting-edge biopharmaceuticals.

2 - Strengthen Europe's global competitiveness in advanced biopharmaceutical manufacturing

Current industry projections indicate that by 2030, half the global pharmaceutical market will be biopharmaceuticals (up from 20% today); biologics are increasing their market share by around 2% every year. Europe would do well to catch up and build much stronger leadership in this highly innovative, strategic sector. Establishing a more attractive environment for science and technology will help Europe generate more breakthrough technologies and compete at a global level. Transforming its industrial activities toward bio-production could contribute to this goal, at the same time providing highly skilled jobs, reducing environmental impact, and increasing the security of supply.

Sanofi has put its weight behind these objectives, investing heavily in transformation, focusing on biologics-based therapies and dedicating one billion euro annually to modernizing our industrial network. Recent investments focus on ramping-up our biopharmaceutical production capacities and expanding our digital capabilities.

We announced our latest initiative in June 2020. We invested more than 500 million euros to creating a state-of-the-art vaccine production site and a new vaccines research center in France. These new facilities will empower us to be flexible and agile so that we can respond quickly to future pandemic risks. While most industrial sites are equipped to produce one vaccine at a time, our Evolutive Vaccines Facility will have fully digital production modules to enable the simultaneous production of three to four vaccines. This represents the kind of step change needed across the pharmaceutical industry, not only in Europe but worldwide.

The dialogue with and support from the French government were pivotal to this strategic investment, which supports a shared goal of strengthening Europe's healthcare and ability to be prepared for health emergencies. To expand such efforts to the European level will require substantial financial commitment, for example funding for cutting-edge manufacturing technologies like those applied in the Evolutive Vaccines Facility. Europe must become attractive in terms of access to innovations, with drugs that will be sold at the right price and adequate market conditions. Additionally, better fiscal recognition of investments made in green manufacturing and manufacturing transformation will contribute to the long-term health of the European pharmaceutical industry, and, more importantly, increase Europe's ability to attract talent and compete globally. Europe must work harder to establish the right competitive conditions for industry of all sizes –global pharmaceutical manufacturers, biotech companies, and medium-sized enterprise– to thrive and adapt to emerging healthcare crisis.

3 - Strengthen European pandemic and biothreats preparedness

Sanofi stepped up early in the crisis to offer its long-standing expertise and worked with partners across the industry to accelerate research into medicines and vaccines, and to ensure access to these when they become available. Our response highlights the importance of reacting quickly to health threats through highly focused international and cross-sector approaches. We were able to increase production capacity and secure supply thanks to our global and diversified industrial network, and the support of European institutions enabled us to ensure the free flow of products.

One of the major lessons learned from the pandemic is that Europe has a real need to organize a sustainable research, development and manufacturing response, and bolster the resilience of its critical pharmaceutical supply chains. That is the only way the region can prepare adequately for future health emergencies. I was pleased to hear European Commission President von der Leyen making a series of important announcements along these lines in September. The announced EU Biomedical Advanced Research and Development Authority (BARDA) leveraging the US experience, will provide the needed framework of collaboration between pharma industry, European institutions, member states and other R&D players.

Pandemic response and preparedness need new models of public private collaboration. We hope to see these important strategic issues for Europe firmly anchored in the EU Pharmaceutical Strategy expected end November. As the largest pharmaceutical manufacturing actor in the EU, Sanofi is fully committed to contribute to this wonderful mission.

Val de Reuil vaccines production site, France *- Despite lockdown, Sanofi's industrial affairs sites have been operating to sustain the manufacturing and supply of all our vaccines - © Sanofi*

Let us not wait for the next crisis to regain European **health independence**

VÉRONIQUE TRILLET-LENOIR

MEP (Renew Europe Group), Member of the ENVI Committee

Shortages of masks, hydroalcoholic gel, reagents for screening tests, respiratory assistance equipment and anaesthetics in intensive care units... The COVID-19 epidemic has aggravated an issue that has been around for some time: the European Union has become dependent on medicines and medical equipment.

For 10 years, several health professionals, pharmacists, parliamentarians and patient associations have been sounding the alarm to convince public authorities of the need to promptly regain European pharmaceutical independence.

Unfortunately, it took a health crisis of this magnitude to raise awareness among Member States. This pandemic is ultimately a real-life stress test exercise. A test the European Union has sadly failed so far.

In the face of the health emergency, national egoisms are first to surface. State overstocks and export bans on medical products and equipment are attitudes that should be eliminated. Solidarity must come first.

After a few weeks of indecisiveness, the European Commission and the Member States realised that taking coordinated measures and actions was paramount against the virus.

Triggering the EU-RescUE reserve; using joint procurement procedures for medical equipment; speeding up procedures for placing medicinal product on the market; the Commission issuing recommendations to Member States; and, currently, reaching advance purchase agreements of vaccines, these emergency measures managed to temporarily mitigate the effects of our pharmaceutical dependence on several third countries.

Progress often emerges from crises. It is up to the European Union to demonstrate that it has grasped the scale of the challenge by adopting remedial innovative actions in the short, medium and long term.

We must now promote appropriate and sustainable responses. Adopting strong, diversified and complementary measures will hopefully shield us from ever experiencing such a state of tension.

Contrary to common belief, regaining our strategic sovereignty will not be achieved solely by bringing back medical equipment and medicines production to Europe.

There is of course an urgent need to relocate part of the production of essential products and medicines of major therapeutic interest to Europe. However, it is utopian to hope that the pharmaceutical industries will work

towards that end without requiring some kind of compensation.

Whether it is through state aid or through the Important Projects of Common Interest Instrument (IPCII), the European Union will have to encourage companies to set up in or come back to Europe. In return for financial support, some guarantees will obviously be required. The aid granted will have to be conditional on full compliance by companies with the environmental and societal standards in force. And the European Union will have to make sure that their set-up or relocation does not result in higher prices for medicinal products.

Creating one or more non-profit pharmaceutical establishments in Europe could enable us to produce mature medicines that are constantly critical. These are old medicines that no longer have any real interest in terms of profitability for their producers.

These structures should, of course, be supported by the public authorities of the Member States. It will therefore be key to garner a strong political will in order to conduct the reflection on this proposal.

Beyond bringing back the health industry on European soil, we must explore various concrete ways of ensuring European pharmaceutical independence.

In the first version of its Multiannual Financial Programme dedicated to health, the European Commission referred to the creation of a sustainable stockpile of essential medicines. The initial budget of €9.4 billion considered by the Commission was a viable option. Unfortunately, the drastic budget cuts to the "EU4HEALTH" health programme, wanted by the Member States, seem to have blunted this too costly ambition. However, we should not give up on it.

The European Union could link marketing authorisations to industrial holders creating reserves of medicines of major therapeutic interest to meet the needs of people over a short period of time, for instance three months, which would not increase the risk of expiry due to storage.

It is finally towards a combination of the various pathways abovementioned that the European Commission seems to leaning in order to regain our health sovereignty.

In her State of the Union address, the President of the European Commission, Ursula von der Leyen, called for the creation of an advanced biomedical research and development agency at European level, modelled on the BARDA in the United States.

The aim of this new agency would be to strengthen our innovation capacity and preparedness for cross-border threats and emergencies. This European BARDA could enable us to build up strategic reserves of medical products.

However, it will require significant financial means, the US BARDA's budget for 2020 being $1.6 billion. How are we to finance a European BARDA with a health programme trimmed down to €1.7 billion over 7 years? This is a question that the Commission and the Member States will soon have to answer in the negotiations with the European Parliament on the "EU4HEALTH" health programme.

Money remains the sinews of this war, so it seems. Despite a drastically reduced funding for health actions, we will have to regain our sovereignty over health products and stand ready to face yet another "stress test".

This health crisis further reinforces the absolute necessity to build a Europe of Health, placing the protection of citizens as our top priority, even at the cost of questioning some of the prerogatives of the Member States to the benefit of a common and shared ambition.

Response to European Parliament's Resolution on **medicine shortages** of 17 September 2020

SIMON WHITE

Chair of EFPIA Supply Chain Working Group

There are a number of reasons to be optimistic about the Resolution on medicine shortages adopted by the European Parliament on 17 September 2020[(1)]. MEPs voted overwhelmingly in favour of supporting multiple measures that could greatly contribute to tackling medicine shortages. Looking beyond the title of the Resolution, which could have been named "Ensuring continued availability of medicines" rather than "The shortage of medicines – how to address an emerging problem", the Resolution itself contains a number of constructive proposals. EFPIA members support their translation into action, through improvements of existing rules where necessary, and through guidance in GMP/GDP. However, other recommendations made by the European Parliament, such as changes in intellectual property rules, and pricing and procurement policies, have the potential to undermine to ability of the research-based pharmaceutical industry to innovate, denying patients access to the next generation of treatments.

An undisputed fact is the underlying impact of man on the environment.[(1-AW, AX)] Not reassuring in itself, this is common ground; EFPIA acknowledges, in our Pharmaceutical Strategy's Roadmap response, that action in this area is a non-negotiable fourth imperative, alongside **medicine availability, incentives for innovation and maintaining the EU's global leadership position**.

There is a fundamental need to base decisions on facts rather than assumptions, emotions and individual interpretations. While the Resolution lists over 100 points for action, one of them is to commission an independent study to assess the actual root cause of medicines shortage. That study will make known the facts on which recommendations for action can be based. In this sense, the call to action in the Resolution should hopefully be open to fine-tuning depending on the outcome of the study.

That the EU is currently overdependent on medicines and active pharmaceutical ingredients (APIs) from non-EU sources is a myth based on generalisation. Pharmaceutical manufacturing and supply are highly complex largely because of the great complexity of medicinal products themselves, and as advanced therapies become available, this theme of segmentation will continue. *For example, in the generic sector* manufacturing may depend disproportionately on non-EU sources. However, for the innovative medicines sector, an EFPIA members' survey shows that 76% of our medicines for patients in the EU use APIs that we also make in Europe (8% China, 3.4% India). The key is to ensure that policies are evidenced-based and nuanced enough to account for the differences across the pharmaceutical sector.

The EU became a leader of pharmaceutical innovation in the past, in part due to incentives established by EU policymakers, which provided a basis for long-term investment decisions by manufacturers. This can be continued for the innovative sector and introduced now for the sectors that, conversely, were incentivized to invest elsewhere. As an example, there exists manufacturing technology that is modular, mobile, small-scale and transportable. Given a standard set of starting materials meeting pre-defined specifications, production can take place using a process that can be replicated anywhere in the world. This is enabled through technological advancement. What then is the "manufacturing site" registered in Module 3 of the Marketing Authorisation Application? Does the current process allow the pharmaceutical regulatory framework to keep up with innovation in a way that optimizes the availability of medicines to patients?

What is the factual basis behind the "emerging problem of shortages"? or the assertion "…the problem of shortages of medicines within the EU has worsened *exponentially* in recent years" [(1-A)] (author's italics)? The unparalleled pressure of the pandemic on global supply has exposed risks of shortage but in reality, both the innovative and generic pharmaceutical manufacturers responded successfully to surges in demand. This was possible due to well-established, continuously fine-tuned and monitored, highly orchestrated processes of forecasting, demand, production and distribution planning for replenishment. In crisis, collaboration was also a key to success. The weekly forum uniting manufacturers and marketing authorisation holders with the European Medicines Agency (EMA) / Heads of Medicines Agencies (HMA) and EU Commissioners during the first four months of the pandemic, was a welcome opportunity for dialogue, to refine existing reporting processes, and to alert EU health authorities of emerging supply constraints and act on these swiftly. Few of the shortage notifications translated into unavailability of treatment for patients, despite surges in demand of up to +300%, thanks largely to foreseen shortage being offset by availability of alternative medication and general pandemic preparedness. In the analysis of root causes of potential shortages, disruption of supply beyond the control of the pharmaceutical manufacturing and supply chain process itself, such as government-imposed movement restrictions (export bans) and national stockpiling, as well as demand variance due to unexpected unavailability of alternative treatments, are at least as significant as the unavailability of APIs or starting materials.

To this end, we welcome the call launched by the European Commission for a study on the multifactorial root causes of shortages, to

provide facts on which decisions and priority actions can be based.

Other aspects of the Resolution are also encouraging. The innovator companies, through EFPIA, are keen to build on the active collaboration with EU institutions put in place during this COVID-19 crisis, which could be considered a precursor to the EMA-led pharmaceutical forum [1-18] proposed in the Resolution. Key areas for development of the intentions expressed in the Resolution into concrete measures, to be confirmed by the results of the study on root causes, and which will enable their implementation, include:

- **Regulatory Flexibility**: patient access to medicines across Members States[1-66], use of e-leaflets[1-75], revision of Variations rules [1-112] to facilitate the registration of alternative manufacturing sources[1-16] or to facilitate innovative production technologies.
- **Shortage prevention**: harmonisation of definitions and processes [1-5,26]. Prevention plan/ risk assessment [1-27,77].
- **Parallel trade:** as contributor to imbalances and shortages, and "inadmissible" business practice as high risk of abuse and entry of counterfeits [1-19,34,67,78,79]
- **Social and environmental responsibility**: coordination and incentives, coupled to the EU Green Deal, with other sectors (trade, agriculture, forestry, academia…) in the twin digital and ecological transformation [1-23,24,35].
- **Digitization**: application of artificial intelligence and other opportunities (e.g. use of the European Medicines Verification System) for digitization in supply visibility.
- **Strategic safety stock**: ("EU Emergency Pharmacy") where justified [1-70,71], and enhanced transparency and awareness of current supply chain practice.
- **Influence/guidance of EU institutions for NCAs:** avoidance of disruptive national movement restrictions or requisitioning; respect of free movement of goods and a single EU transport area.
- **Enhancement of epidemiological forecasting**: development of a clear remit, responsibilities and data sharing at national and EU levels [1-72].
- **GDP flexibility**: development of pragmatic guidance for distributors and wholesalers in last mile transport, particularly in remote areas [1-104,105].

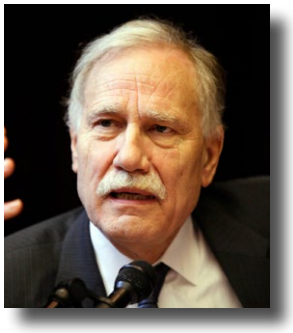
As partners in healthcare, EFPIA members look forward to further collaboration to support these complex subjects with the common goal of ensuring continued patient access to medicines across the EU. A longer-term collateral benefit to both policymakers and the healthcare industry will be renewed public trust in these processes.

References

(1) European Parliament resolution of 17 September 2020 on the shortage of medicines – how to address an emerging problem https://www.europarl.europa.eu/doceo/document/TA-9-2020-0228_EN.html

Specific paragraphs are referenced e.g. 1-AX or 1-72

(2) EFPIA: The Innovator Industry's position relating to Pharmaceutical Manufacturing and Innovation in Europe, Version (Draft) 22 September 2020



DOMINIQUE RIQUET

MEP (Renew Europe – France), Member of the TRAN Committee

The EU recovery package and the 2021-2027 budget: useful levies to **foster a European strategic autonomy**?

The quest for strategic autonomy has been a long-standing European ambition but not always well accepted among Member States. While some of them associated it with the building of a European sovereignty and feared it would lead to the creation of EU competences in sectors critical for their national sovereignty, others considered it as a vector of protectionism. Yet strategic autonomy was at the core of the first European policy launched in 1962, the Common Agricultural Policy (CAP), which initial goal was to make Europeans self-reliant by ensuring a stable supply of affordable food. Several milestones in the European integration contributed to build an economic and commercial powerbase through the Single Market, the Schengen area, the Eurozone or the recently agreed Union's borrowing capacity on capital markets to invest and reform. The ability to export standards globally, in particular in health, safety, food or the environment, is another dimension of the EU's strategic power.

The outbreak of the COVID-19 pandemic has however exposed major European vulnerabilities, in particular the over-reliance of strategic industries on external supply sources in key value chains. In times of increasing trade tensions at global level and of deep crisis within the multilateral trading system, advocating for an open European strategic autonomy is more than a mere foreign policy issue but rather an imperative. With competing heavyweights such as the USA or China, the EU is the only vehicle through which Europeans can reach an adequate degree of strategic autonomy and remain shaping powers at global level.

As MEPs and Member States are currently negotiating the 2021-2027 long-term EU budget and the recovery plan, it is the appropriate time to rethink our approach towards a European strategic autonomy and to analyse to what extent budgetary instruments can contribute to this ambition. They should be levied as following: first in a proactive way by ensuring our self-reliance through targeted investments in critical goods and infrastructures and secondly in a defensive way by protecting our Single Market from foreign unfair practices hampering European interests.

Building a new investment strategy to increase the competitiveness, autonomy and resilience of the EU and to address the unprecedented social and economic challenges has been rightly identified by the Commission as a top priority for the next seven years. Several budgetary instruments in the MFF and recovery package are designed to fulfil that purpose. Among these instruments is InvestEU, using an EU budget guarantee to boost public and private investments. In May, the Commission reviewed the text to include explicitly in its remit investments securing the supply of critical resources (medical products, transformative digital technologies, etc). However, Member States drastically reduced the InvestEU budget. Financial flows were in fact redirected to programmes for which Member States have a stronger decision making power. This is the case of the Recovery and Resilience Facility (RRF), which will provide financial support to Member States through loans and grants based on national recovery and resilience plans assessed by the Commission. But the guidance issued in September by the Commission on how Member States should spend the money from the RRF is very diffuse and barely mentions the EU strategic autonomy as an objective. National political pressures on these plans are largely expected and risk divert money from strategic investments with a European added value. In the end, the Commission does not have any tangible levy to make sure that financial flows from the RRF are channelled towards projects contributing to the EU's strategic autonomy.

In this context, intensifying and better targeting strategic investment flows will not be enough. We also need a more defensive approach protecting our European companies through rules, values-based and fairer trade and the fight against unfair competition (including social and environmental dumping). Own resources for the EU budget, such as a digital levy or a carbon adjustment mechanism, are part of the solution. Their benefits are to protect European industries, to ensure that our standards are not undone by countries with weaker standards and to bring our trading partners to move ahead with similar climate ambitions. Hence, granting access to the Single market at conditions reflecting our standards and values is an essential dimension for strengthening our strategic autonomy while preserving the benefits of an open economy. In addition, the introduction of a basket of new own resources will represent new sources of revenue to the EU budget and could facilitate a better focus of future investments at Union level on priority strategic areas.

Overall, financial tools, whether used in a proactive or defensive way, will not be sufficient for the EU to be considered as a powerful and sovereign actor on the international stage. Political guidance needs to be provided on how financial resources are channelled towards strategic projects with a European added value. To that purpose, EU competences are required in critical sectors such as health, industry or defence, all of these sectors playing a pivotal role in building a strategic autonomy in today's world. Without any EU competencies in these critical sectors, the financial resources deployed through programmes managed by Member States will not have the firepower needed to make the EU a shaping power with strategic autonomy on the global stage.

The risk of picking winners

MARIA DA GRAÇA CARVALHO

MEP (EPP Group - Portugal),
Member of the ITRE Committee

The ecosystems approach used by the European Commission for the European industrial policy is innovative. It responds to a need to be pragmatic that we all understand, especially in the current times. It also represents a novelty for the Union and the Member States. It can offer a good analysis of some of the major contributors to the European GDP, focusing on each sector's specific needs and priorities.

From another point of view, however, it can be dangerous as it risks picking winners among very different sectors and countries. Member-states have their own realities, not necessarily reflected in this set of fourteen horizontal ecosystems identified by the Commission.

No one will question the specific choices. Everyone understands the decisive importance of sectors such as Tourism, Mobility, Aeronautics, Electronics, and Health. The problem is that, when you make these choices, you are bound to leave something behind, because you overlook the horizontal ecosystem that is at the base of everything.

This consequence is contrary to our aim, and that is why the vertical logic should not become the rule.

The industrial strategy should at least also delineate some ecosystems that apply horizontally to all the vertical value chains, aiming at boosting innovation, reducing the administrative burden and simplifying bureaucracy and rules.

Another horizontal ecosystem should address manufacturing in general, as the digital transformation and the circular economy plans will be of transversal interest. They will invite us to re-think factories and the way we produce all sorts of goods.

Matching short-term objectives with long-term vision

My hope is that the next steps of the European approach to relaunch our economy, build an open strategic autonomy, achieve a more climate-friendly society and identify the industrial priorities will be consistent and coherent. For the time being, I do not see this goal attained.

The difficult balance between the need to act quickly and decisively and the importance of laying the foundations for our future is obvious, not just in the Industrial strategy but also on a larger scale.

Even before the Covid-19 outbreak, the European Union recognized the need to boost its global competitiveness, through policies aiming to increase the leadership in key emerging sectors related to the digital transformation or the development of the green economy. The present crisis reinforced these assumptions and highlighted even more the complexity of our global interrelation and the need for the EU to build a broader concept aimed at making strategic autonomy a priority.

The recovery plan is a good, even if not perfect, package of proposals that should be a pragmatic help for our economy to regain control on strategic areas and value chains. However, while we appreciate its ambition and the common effort that this package of measures is witnessing, we have noticed a significant unbalance between the sides of the twin transformation that the EU is undertaking. The gap in terms of investments for the green and the digital pillars of the recovery is enormous.

As many other members of the European Parliament, I find it very hard to believe that the resources pledged to the digital transition will be enough to enable the comprehensive transformation we aim to achieve.

The proposals approved by the European Council in July, on the EU's long-term budget, the Multiannual Financial Framework (MFF), are also failing ambition and vision. The proposed figures are very bleak and unwelcoming. Namely for research and innovation, essential if we want to achieve our main goals.

The European Parliament would like to see a much higher budget dedicated to Horizon Europe. We are all convinced that research, innovation and education are strategic to reach our targets, tackle our challenges and bring forward the policies meant to increase our competitiveness, create a circular, less harmful and de-fossilized economy, digitally transform our society and projecting the European industries into the future.

This lack of vision and ambition is present in the overall strategic goals of the next multi-annual budget. The proposed MFF even leaves aside several areas, including some of the key emerging technologies. Technologies that should never be overlooked in the large investments needed to build the future for our next generations.

I do not see this as a case of different perspectives. European Commission, European Council, European Parliament, in the end we all agree on what our goals should be. However, this unanimity will mean little if we do not take the necessary steps.

MORTEN **HELVEG PETERSEN**

MEP (Renew Europe - Denmark)
Vice-Chair ITRE Committee

The crisis should cement our commitment to the **Green Deal** and hasten the need for a green, digital and resilient recovery

We do not have the time to set a pause on the green transition – time is essential, so let's make the current crisis an opportunity to cement our commitment to a green recovery of Europe.

The current COVID-19 crisis has already had considerable negative effects on the European economies. The responses from the European Union and its member states are of an equal size in properties to help the economy recover, but we must make sure that they are solutions of the right measure for the future.

A green transition and decarbonatization of the European economy is still a fundamental issue of an equal size before and after the COVID-19 pandemic. No matter the scale of the current health crisis, the climate problems will still be there to be solved – and time is essential.

I believe that a Green Recovery Plan can help in the fight of both problems by restarting the economy in greener way. We can secure the future of the European economy and still fight global warming and its climate issues, we just need to make sure that the money spent to help the European businesses and economy is spent on creating sustainable jobs and researching a green future.

The recovery package of 750 billion euros is no doubt a tremendous investment, and has the potential to give a great lift to the European Economy, but has equally the potential to fight the climate changes and commit the Union to the Green Deal.

Electrification and renovation of the union

The recovery plan is a great opportunity to push the gas paddle, such that we get a greater push for the development of green solutions both in the electric power grid and green solutions in the European society though a "Renovation Wave".

Although most of the member countries are building windmills, solar fields and other great sources of green power in a growing scale, this crisis and the crisis fund needs to push the development further and not be a cushion of hesitation.

In the same way, one of the major projects of the recovery plan is to start a "Renovation Wave". Hereby we can generate jobs in the renovation of buildings throughout Europe. An example is the decarbonization of the heat sector with heat pumps and districts heating and cooling (DHC). Expanding the DHC network in Europe has the possibility of creating 220.000 jobs until 2050 while creating a more resilient and green energy supply for the households, that has a lower dependency on fossil fuels.

Don't let the energy go to waste

Another important step for us to secure the decarbonization of the whole society, is by optimizing the production of renewable energy. We need to invest in options to store green energy, which is not being consumed instantly - that includes the wind energy produced at night and the sun energy produced when Europe is on holyday and the industry production is downscaled. This energy is there to be used at a more appropriate time - we just need a way to store it.

Therefore, it is of utmost importance that we explore the options of energy storage and use the recovery plan to invest in technologies that can fulfill this need and create a potential thriving industry. Here green hydrogen might be part of the solution, such that we create large scale green hydrogen production directly linked to renewable energy sources throughout Europe.

This will not only optimize the energy that we produce and thereby secure low cost and a high resilient energy network, but also give the opportunity to link the power grid to the areas such as the heavy industry and transportation that is harder to electrify. That can create a complete form of harmony so investment in renewable electricity can have a positive effect on sectors that would not normally be connected to the power grid.

Let smart and digital solutions lead the way

Further, there is no need to only go the hard way. There are loads of digital and smart solutions waiting to be installed in the households and in society in general such as using heat surpluses from digital data centers and the industry in general. This can optimize our use of energy and lead to an easier and more green everyday life.

So, let's ride on the wind of the recovery plan to build a green, digital and resilient Europe – for the sake of the future. Let's show the rest of the world, how we can both recover the economy and fight the climate changes at the same time.

ANDREAS SCHWAB

MEP (EPP Group),
Member of the IMCO Committee

Strengthening Europe's industry as an engine for **growth and a catalyst** for the green and digital transformation

The European Commission has presented its European Industrial Strategy at the beginning of May this year. While at the time the strategy was very much to the point and included many positive measures to go hand in hand with the green and digital transformation ambitions, we will have now to adapt it to the new and different situation compared with May of this year. Our economy has been hit hard by the Corona crisis. Supply chains were interrupted due to border closures, not only globally, but regretfully also within in the European Union. The Corona crisis has shown us the shortcomings of our current system and the lessons learned from the Corona crisis need to find their way into the Industrial Strategy that the European Commission is proposing.

Firstly, we need a **resilience** plan for essential products and services. Through the Corona crisis, the shortcomings of global supply chains became visible. In many countries, urgently needed medical equipment such as masks, protective gear and respirators were not available anymore although all components were produced. Industrial production was disrupted and cross-border supplies of these products were cut off. This was unfortunately also the case within the Single European Market, where Member States closed borders.

In critical areas such as pharmaceuticals, medicine or essential food supply, we need to establish European resilience and think about assuring essential supply in Europe. In critical sectors we do not want to be dependent on third countries, but just on our European Member States. In critical sectors we should be able to guarantee a large availability of products all over Europe at all times. In other production areas, companies will most likely reassess risks and reduce dependencies as a consequence of the Corona crisis themselves. Internationally operating companies will not have to sacrifice the efficiency benefits of cross-border supply relationships, but they will take more precautions against crisis-related production disruptions in the future. The risks for them are not the international value chains as such, but dependencies on individual suppliers, customers or locations. In order to better protect themselves against disruptions, companies might for example integrate suppliers from several countries whose services can replace each other in the value chains or they will have to invest to stock essential material. This should be supported by the European Industrial strategy as we want critical sectors to be able to supply European citizens at any time, but we should not put into question globalisation as a whole.

Second, we have to keep in mind that the EU's industrial **competitiveness** relies not only on well-functioning supply chains and the free movement of goods, but also on a fully functioning single market in services. We have to be aware that even before the Corona crisis, unjustified regulatory and non-regulatory internal market barriers existed. Strengthening industrial production in Europe also means strengthening the free movement of services. This is a lesson we should have learned already before the crisis, but through the Corona crisis the problems became even more apparent.

Third, while we should ensure an ambitious strategy for the **green and digital transformation**, we should not undermine our market economy and we should be careful not to overburden our companies. This holds true especially now in times of economic crisis. We are dependent on our European industry to counter the effects of the economic crisis. While of course it is important to keep the green and digital transformation in mind when thinking about ways to boost the European economy, we should be careful not to be short-sighted. In the long run, we need digital and green solutions that work also beyond 2030 and this will only be possible if political ambition and economic reality go hand in hand.

Last but not least, especially in the digital transformation we have to underline the importance of the European Single Market, online as well as offline. A better functioning of the Single Market could generate further growth, in the area of industrial products an additional EUR 183 to 269 billion per year could be generated and in the area of services 338 billion euro extra per year according to the European Commission. A better functioning of the Single Market as well as better enforcement of Single Market rules should be our priority to strengthen our industry and help to make it strong enough to shoulder the digital transition and green transformation.

Deployment of Artificial Intelligence **is key to European competitiveness**

HENNA VIRKKUNEN

MEP (EPP Group),
Member of the ITRE Committee

European industry is still in the first innings of its application of Artificial Intelligence (AI). For thriving in rapidly changing landscape of the digital economy, the industry needs to stay up to speed with technological development. It is our responsibility as policymakers to ensure that the European industry as a whole has the means to succeed in this.

AI deployment is one of the keys to European competitiveness in the digital era. In order to facilitate the uptake of AI in Europe, we need a common European approach to avoid internal market fragmentation. Creating a clear European regulatory framework and long-term legal certainty will increase trust of consumers, public sector and businesses in AI, thus accelerating the uptake of AI throughout different sectors.

The potential is enormous. According to an estimate by the European Parliamentary Research Service, a common European approach to ethical aspects of AI has the potential to create up to 294.9 billion euros in additional GDP and 4.6 million jobs in the EU by 2030. However, for turning this estimate into reality, we need to carefully avoid setting excessive red tape that may hinder technological development. In the current discussion, dominated by both perceived and legitimate threats, the risk is to lose track of the bigger picture.

Do not get me wrong: we need rigorous standards based on European values, and we need to address the risks associated with fundamental rights. However, we also need a regulatory environment that encourages innovation and supports the development of new technologies and applications. These two goals do not need to contradict but they must be in balance. Over-regulation, even when based on good intentions, will disadvantage the European industry in a way that will be hard to fix later on.

The uptake of AI does not require a regulatory revolution, but rather careful revisions of existing rules complemented with new initiatives. Sector specific regulation for the broad range of AI applications would be preferable, but also a horizontal legal framework based on common principles seems necessary for filling in the gaps, ensuring a common approach across the EU and boosting digital innovation with consistent and uniform rules.

The current digital policy discussion revolves around the much-awaited upcoming Commission legislative initiatives, especially with the ones concerning data. We need to create the necessary framework to facilitate cross-border data use and data sharing, as well as enhance access to public sector data. The upcoming legislative initiatives should cover interoperability, sharing, access and portability of data.

In addition to new legislative tools, we must carefully examine how our existing rules relate to the technological developments. As of now, there is a clear tension between the traditional data protection principles - such as purpose limitation, data minimisation, special treatment of sensitive data, limitation on automated decisions - and the full deployment of AI. Changes to the civil liability framework are necessary, but there is no need to re-invent the wheel. The existing framework already answers many of the questions posed by technological developments.

In addition to addressing contemporary questions, we should take a close look at what to expect next. If we think of the classification of three to four waves of AI, we should ask ourselves are we still too focused on the second wave and not thinking ahead enough?

AI technologies today concern mainly deep learning and statistical, big data approaches to AI. Instead of enormous sets of training data, Third Wave AI systems will learn from descriptive and contextual model. This will reduce the dependency on large data sets, but raise different complex societal and regulatory questions, which we need to address via dynamic legal mechanisms. It is a big challenge to create a framework that will respond to the third and fourth waves of AI. So far we have only scratched the surface of this discussion.

As Europeans, we can and must lead in the field of AI. Our strategic position, which puts European values at the heart of our approach, is the right one. However, faced with international competition from the likes of China, Russia and the United States, we need to strike the right balance that fosters innovation, competitiveness, and European leadership in the field of AI. If we succeed in finding the balance, we can use AI to bring unimaginable benefits to the world at large, creating better, safer and more sustainable futures.

Fostering greater connectivity across Europe

DITA CHARANZOVA

MEP (Renew Europe Group), VP of European Parliament, Member of the IMCO Committee

In her State of the European Union address last month, President von der Leyen has made clear: "We must make this Europe's Digital Decade". This was very clear in the Commissions political guidelines: to create a "Europe ready for the digital age". Calls to push forward with digital development, however, have a longer history. The Juncker Commission started their term in 2014 with a promise to harness the digital transformation to kick start the European economy following the financial crisis, and to create a Digital Single Market. A lot happened in those 5 years, but what are the challenges now in 2020, and where should our focus lie?

I argue that the fundamental building block of the digital transformation should be connectivity. We need good connectivity brought to every corner of the EU to help us overcome the economic, territorial and social divides within the EU that threaten to grow because of the covid-19 pandemic. The EU can counter this dividing trend with next-generation innovations around 5G and high-performance networks.

An important element to improve connectivity for the benefit of businesses and citizens is not just to connect them to the internet, but also to provide a better and faster internet coverage. We are already advanced in this goal. The share of EU-27 households with internet access was 90% in 2019, compared to 64% in 2009 (Eurostat). The primary objective at this stage should be to develop the internet available to citizens, in parallel with the objective of increasing internet access to 100%. Giving European households access to 100 Mbps connections by 2025 would be a step towards enhanced connectivity.

Everyone will benefit from high-speed internet, be it the businesses or the consumers. Sooner rather than later, high-speed internet will become a necessity because of the transformation of the EU labor market, where Covid has acted as a catalyst to accelerate more jobs online. New professions will exist and a new set of skills will be required. The current connection is sufficient for leisure use, such as streaming movies, but throughout the lockdown period, it has become clear that by working or studying from home, the limits of the internet connection are very quickly reached. If this is already the case now, what will happen when jobs become even more digitalized?

Today, each house should have at least 50 Mbps connection for individuals and companies to remain productive. This is simply not the case though, so something needs to change. People should not have to decide between work or their children attending online classes in 2020 Europe.

The latest action for a digital Europe was taken last month, when the Commission published a Connectivity Recommendation, calling on Member States to work together to develop procedures and accelerate the deployment of 5G and fiber networks. The EU should agree on common measures so that network deployment costs will be reduced and the 5G coverage can be improved. Cross-border cooperation will be relevant not only for efficient deployment but also for the common security of the 5G infrastructure. Wide 5G coverage in urban areas has big economic potential seeing as three out of four EU citizens live in urban areas, which account for 85% of the Union's GDP. But it is also the key to ensure that our rural populations can take part in future economic growth online.

Without a doubt the EU's economy is stronger today than it would be during a pandemic without the technology we have. But the Commission, Council and the Parliament will have to do more to ensure the "digital decade" becomes reality. To achieve this, the EU will have to gain ground compared to the world's leading digital leaders, such as the US, to remain competitive. By 2025, half of all US households will have access to 5G network technology, but only every third household will have access in the EU[1]. This is not acceptable. To reduce this gap, member states must work together to address discrepancies in connectivity. The EU has shown the political will to foster greater connectivity - now political action has to follow.

1 https://www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_North_Am.pdf (p. 10)

Shaping Europe's **Digital Future**

PILAR DEL CASTILLO

MEP (EPP Group),
Member of the ITRE Committee

The COVID-19 pandemic has acted as a magnifying glass that has shown with absolute clarity that Europe needs to move up a gear in its digital transformation.

Indeed, the health crisis is drastically impacting our daily lives, and as a result, the relevance of digital applications and services is accelerating. For example, we suddenly see an increased need for communication services, tools for remote collaboration, and fast and reliable access to data, whether it's from the office, the home or somewhere in between.

In other words, the pandemic has signified the importance for Europe of having access to the best physical and digital infrastructure. That is, the physical resources that are necessary to enable the use of data, computerised devices, methods, systems and processes.

Regarding physical infrastructure per se, it is clear that the deployment of very high capacity networks, and specifically 5G, will for example, open new ways of working in areas such as manufacturing, media, automotive, media and healthcare, allowing for both increased productivity and completely new user experiences. To the extent that very high capacity networks will allow Europe to take a quantitative leap benefiting an entire ecosystem of technologies, such as virtualization, cloud computing, edge computing, artificial intelligence, machine learning, network slicing, or automation.

However, in order to do so the EU must first **ensure that the recently adopted Electronic Communications Code is implemented correctly.** Let us not forget that the Code sets a regulatory treatment that ensures predictability, reward risk-taking and long-term investment in very high capacity networks and support the rapid development of 5G communications.

In addition, we must continue to eliminate persisting obstacles for gigabit infrastructure deployment: Despite gigabit fibre and 5G networks being a necessary precondition to achieve European digital sovereignty, such infrastructures are still not widespread. The European Union must increase cooperation across sectors and exploit synergies (e.g. with energy, water, transport) by creating the condition for more efficient deployment of new physical infrastructure so that the networks can be rolled out at lower cost. In this regard, and taking into account that civil engineering, such as the digging-up of roads to lay down high-speed broadband, accounts for up to 80% of the cost of deploying broadband networks **Europe needs to review the Broadband Cost Reduction Directive as soon as possible.**

Nevertheless, in today's data economy while having the adequate physical infrastructure is a prerequisite for economic growth and higher productivity, this is only part of the story.

Digital infrastructure, understood as the physical resources that are necessary to enable the use of data, computerised devices, methods, systems and processes, is the other part of the story.

More specifically **Europe must focus on reinforcing capacities in high performance computing, artificial intelligence and cybersecurity**. It must no longer be acceptable that while the EU currently consumes one third of high performance computing resources worldwide it provides only around 5%, pushing EU scientists and engineers to turn massively to computing resources outside Europe.

Let us not forget that, Europe remains dependant on US chipmakers and three American companies dominate the global chip market. China, on the other hand, is leading in supercomputer research. It is number one and number two on the list of the highest performing computer in the world ("Sunway TaihuLight"is).

To tackle this crucial element, we need to increase investment and spend in a smart way. From this perspective, the recent European Council conclusions of the 2nd of October are very welcome. Not only because at least 20% of the funds under the Recovery and Resilience Facility will be made available for the digital transition, also because the European Council expressly indicated that these funds should help advance objectives such as "fostering the European development of the next generation of digital technologies, including supercomputers".

In addition, the EU must continue to work in initiatives such as the recent partnership between the European Commission and the European Investment Fund to set up a pan European venture capital fund-of-funds programme (which as you know allocates 410 million euros to invest in European venture capital market and is expected to raise an additional 2.100 million Euros from public and private investment).

Moreover, as I have said, it is not only about the quantity, but also of how it is spent.

In that sense, it is worth underlining the role of the **first ever Digital Europe programme** whereby the Commission proposed and Parliament has supported, to invest, €9.2 billion in the operational requirements of capacity building in the areas of high performance computing, artificial intelligence, cybersecurity and advanced digital skills.

Lastly, it must be stressed that, even with the best infrastructure possible, Europe's growth potential will be determined by the skills of its population and workforce. Consequently, the EU must promote a reskilling revolution that supports digital skills and competences in science, technology, engineering, mathematics, entrepreneurship and creativity,

Clearly much of the success of all of these measures will depend of the willingness of all actors, and especially of the Member States, to act together. I am confident however, that one of the most important lessons that we have learnt from the crisis is that we must act united. The coronavirus crisis is sadly a perfect example.

A **cybersecurity strategy** for a strong and sovereign digital Europe

EVA KAILI

MEP (S&D Group),
Member of the ITRE Committee

Security is a basic human need and a protected fundamental right of European citizens. As the EU edges closer to its digital future, security must not be taken for granted. In our interconnected digital world, security and safety threats are becoming more complex, while the fine lines that separate the physical from the digital world are becoming more blurred. Cyber-attacks bridge the threats between these two worlds; the examples of cyberattacks crippling energy infrastructures, restricting access to bank deposits, taking down entire sections of the Internet or hacking into IoT devices like the smart lights we use in our homes, highlight that harm and insecurity can spillover from the digital to the physical world. The massive data leak in the Cambridge Analytica case ignited a privacy awakening and emphasised how personal data can be misused to manipulate users. In the aftermath of Cambridge Analytica, and as Europe strives to build a better, safer and more inclusive digital society, strong cybersecurity standards are needed to ensure the protection of digital human rights.

Digital transformation brings Europe a myriad of opportunities for innovation and prosperity, however it also exposes vulnerabilities in systems and networks. Cyber-attacks are now more prevalent, swift and untraceable than ever before. As we now build the ground for new technologies in Europe, we aim at developing solutions to benefit and improve citizens' lives. Trust is a decisive factor for the uptake of new technologies, and a strong cybersecurity framework will be the key to inspiring trust in users.

The COVID-19 pandemic accentuated our reliance on digital technologies and elevated the need for Europe to guarantee security in both the digital and the physical environments. The increasing immersion of digital technologies in Europe's supply chains, critical infrastructures and the lives of citizens raises cybersecurity to a matter of strategic importance. Europe's ambition to compete for global leadership in the development of exponential technologies such as AI and the IoT adds another layer to the intricacies of building a strong data economy permeated by a culture of cybersecurity-by-design.

The new cybersecurity certification framework under the Cybersecurity Act is important in establishing this culture of cybersecurity-by-design, with security fitted into products and services from inception. This voluntary certification framework sets three assurance levels aligned with cyber risks and classifies the depth of evaluation to obtain certification. Two certification schemes are already in preparation while priorities for further schemes are expected to be defined later this year. The certification framework addresses products, services and processes, including traditional ICT products, information services such as cloud storage, consumer IoT devices, and the connected devices that manufacturers use in medical devices and vehicles. The voluntary nature of the framework is periodically assessed and the Commission may decide upon making certain schemes mandatory.

This framework is aimed at enhancing trust and security in the Digital Single Market for both citizens and vendors, who stand to benefit from the competitive advantage of providing more secure digital solutions in Europe. Combined with a reinforced mandate for ENISA, this framework is an opportunity to reach a higher degree of harmonisation in the Single Market.

The Commission's proposal for a Joint Cyber Unit increases internal coordination to prevent and deter cyberattacks by instituting a mutual assistance mechanism. A clear process, objectives and timeline are expected by the end of the year. The EU has underlined the strengthening of its cyber resilience by emphasising cyber-defence as part of the Common Security and Defence Policy, while Member States are collaborating under PESCO to establish four cyber projects, including Rapid Response Teams to detect and deter cyberattacks. This year, the EU also adopted a joint toolbox of mitigating measures to address the security risks related to 5G, which is poised to become the breeding ground for developing and deploying exponential technologies in Europe at scale.

Resilience and coordination are needed at the international level. The interconnectedness of the digital ecosystem means that cyberattacks that happen outside the EU have a major impact on security within the Union. The EU has a comprehensive cyber diplomacy toolbox aimed at preventing, deterring and responding to malicious behaviour in cyberspace. An autonomous cyber-sanctions regime within this toolbox was used for the first time in late July this year, imposing travel bans and assets freezes against six individuals as well as assets freezes against three entities involved in cyberattacks known as WannaCry, NotPetya and Operation Cloud Hopper targeted against companies located in the EU.

Citizens, businesses and governments cannot expect to be protected at the national level alone. The digital ecosystem is global, and so are the risks that it carries for security and safety in the cyberspace. Our goal is to develop high-quality, safe and secure technological solutions in Europe while protecting the digital human rights of citizens, and creating a prosperous and inclusive digital society founded on open innovation and trust. Our ambition to become technologically sovereign and lead in the race for purpose-driven innovation based on our common European values requires both a culture and an enforceable cybersecurity framework that protects citizens, businesses and governments, while enabling safe and secure innovation.

ECSEL JU – Securing Europe's future through impactful **RD&I in electronics**

LUCIANO GAUDIO

Deputy Head of Unit for Communications
ECSEL Joint Undertaking

ECSEL JU (www.ecsel.eu) operates a unique model for financing collaborative RD&I in Europe, which brings together the best of Industry, 29 Participating States (EU and non-EU Member States), and the European Commission around a commonly agreed strategy for its sector – Electronic Components and Systems (ECS). These are the most fundamental capabilities upon which virtually all other domains rely. Access to these technologies must be guaranteed, to secure any of Europe's societal goals. As emphasised by Ursula von der Leyen, President of the European Commission, in her 2020 "State of the EU" speech, ECS underpin all digital technologies, and impact everything from healthcare to clean energy and transport, food safety, broadband communications and competitive industries offering meaningful jobs for all.

The importance of assured access to ECS is therefore paramount for Europe. ECSEL JU raised this topic at its Symposium of 2019 in Bucharest, which was further iterated on by Commissioner Thierry Breton in the Symposium of 2020 (https://www.ecsel.eu/ecsel-ju-symposium-2020-brussels) and many other public statements. Quick and direct access to key products and technologies - although the diversity of concerns it brings, in a fully interconnected world – is a topic of very high political visibility, now even more emphasised by the consequences of the COVID-19 pandemic.

The ECSEL JU unique funding model, based on open collaboration, has demonstrated its capability to achieve concrete results, while coping with concerns of stakeholders and respecting their diversity of standpoints. This has already resulted in multi-billion investments in new manufacturing capacity in Europe (see the reports on ECSEL JU impacts at https://www.ecsel.eu/publications).

Bert De Colvenaer, the Executive Director of ECSEL JU, has stressed several times the need to develop an ambitious European industrial plan for ECS, where RD&I is key for assuring the technology autonomy of the EU. We live in a world-wide market evolving at the highest speed: new needs, new expectations, new priorities are in front of us. So, we are asked to provide answers to match that speed. Innovative working models based on collaboration and knowledge sharing are needed, and ECSEL JU offers a clear example of "thinking together, working together and investing together", how a joint program may bring excellent results in a very competitive market like ECS.

Digital technologies are key for our society and for the EU's economic recovery and, also, stability. The goal should be to make Europe the most attractive place to develop and deploy new ECS technologies. Stable legal frameworks, industrial strategies, and political willingness as well as favourable economic conditions are crucial to make companies stay and invest in the EU.

To quote the EU Council President Charles Michel: "Production of [computer] processors, vital medicines, and other essential products ought to be brought back to Europe from overseas. The strategic independence of Europe is our new common project for this

century", he said at the Brussels Economic Forum, after the coronavirus pandemic exposed the reliance of EU supply chains in China.

The ECS sector is growing at the highest speed, driven inter alia by electrification and automation of vehicles, digitalisation of industry and agriculture, of electrical power grids (renewables) and even cities. Guided by well-established European values, they form the hub for solutions to societal challenges, including the "European Green Deal". Many of Europe's strengths are based on the deep technical knowledge and leading market position in this sector. These growing markets provide clear opportunities for ECS, but the speed of innovation and its uptake by markets are becoming increasingly important. Value chains are becoming complex networks: shorter and more interconnected. Cybersecurity has become a challenging, high-profile issue. Systems companies need a stable supply of affordable, energy efficient and trusted components well-matched to the needs of their customers. While the steady miniaturisation of semiconductor transistor technology will remain relevant, new paradigms beyond scaling are emerging, and newly emerging computing architectures beyond the traditional ones will need to be brought to market quickly. There is not time to waste!

In the field of ECS, the ECSEL JU program already serves as an essential catalyst for additional investments: EC contribution complemented by national and even regional financial support. With its tripartite model (EU/Participating States/industry), the ECSEL JU facilitates the creation of an ecosystem across Europe, unique and unmatched by any other program in this sector. Future policies can (and should) build further on this model's successes.

The need for a European partnership on Key Digital Technologies appears now strategic to re-build and strengthen the European Digital Competences. The EU has the political power and the technology competence to modify the current dynamics and put in place an industrial policy, in particular in ECS and digital domain, favourable for long-term investments, and so to create stability and technology autonomy, facing up to the massive investments heavily supported by governments in other geographies.

Observing the concerns of the stakeholders in ECSEL JU, we see the need to find the proper compromise between "open market" and the need to secure "technology independence (i.e. securing the supply/value chains)". It is crucial to establish strategic global alliances for

economic and technological issue as well as to identify the today's threats to preserve our own European values. There are sectors, as ECS, where a risk sharing approach is a must, given the magnitude of the effort required.

In that light, we certainly see that public-private investments are the way forward. Only in a context of open collaboration can synergies and alignment of policies and strategies be reached. It is crucial to maintain EU strengths (including manufacturing capabilities) and secure fast access to reliable solutions, wherever possible "made in Europe". We see for the first time, major investments in chip production capacity in Europe thanks to projects funded through ECSEL JU.

However, full access to the best knowledge and networks, based upon reciprocity, is the key for securing autonomy without entering in a protectionism mode.

Lately, the concept of "tech-sovereignty/autonomy" has become a viral phenomenon, due to the COVID-19 crisis. The idea of reducing Europe's dependence on US or Chinese-origin technologies is more and more popular. "If we don't build our own champions in all areas — digital, artificial intelligence," French President Emmanuel Macron recently said, "our choices will be dictated by others".

In this respect, it is also important to mention a very recent statement from the European Court of Auditors. According to a new ECA's analysis published on 10 September 2020 https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=54733, the EU should respond more decisively to the industrial and investment strategies from other geographies. In such analysis, the ECA examines the multiple risks, mainly of an economic and political nature, that the strategy of China's state-led investment brings to the EU as well as the opportunities it offers.

Competing on an equal footing for EU companies operating abroad is essential. Non-discriminatory treatment, transparency, predictability, and legal certainty of the investment environment as well as adequate commitments regarding labour and the environment are equally extremely important.

If the discussion on the need to achieve "tech-sovereignty" is so strategic, then tools to help building strong networks of companies and researchers to lead in breakthrough technologies are crucial.

One way to achieve this goal is strengthening European PPPs where public and private members (including private investors) can work together around an agreed program to share risks. But ECSEL JU is all that! It has reached great achievements and should be continued with an even more ambitious budget, to reach those major investments needed to keep European suppliers ahead of the world in safety-critical electronics, and put European companies ahead in supplying advanced chips used in many domains, such as the mobile telecom industry, including multi-band, 5G radio and beyond.

Ultimately, the question leads to the level of EU and national politics and industrial policy, in coordination between individual planning and dynamics and objectives of a general nature. ECSEL JU has been built to serve the general interest of the European citizens. We look forward to securing an even stronger contribution under the new KDT Joint Undertaking.

NATHALIE **ERRARD**

Senior Vice President,
Head of EU & NATO Affairs, Airbus

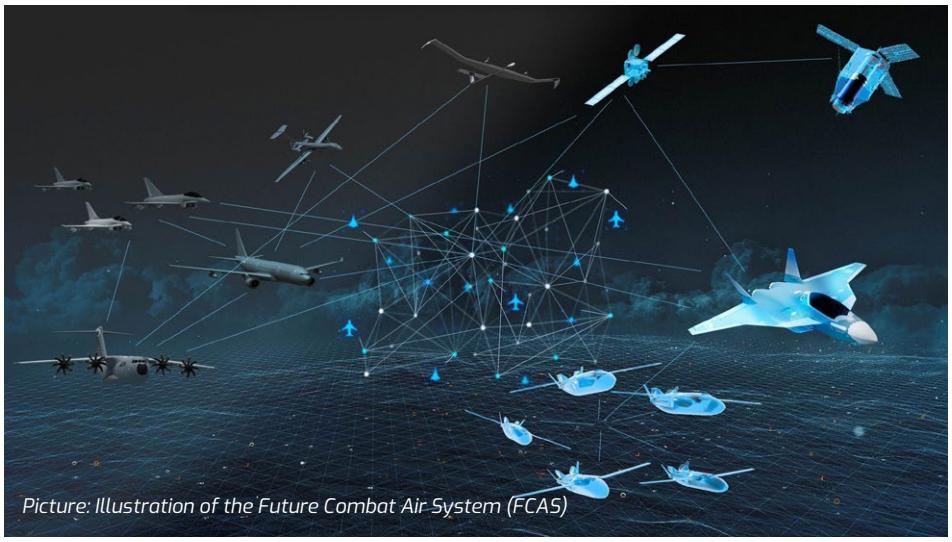
Why is the aerospace & **defence ecosystem** the right level for the industrial strategic autonomy?

Achieving strategic autonomy while preserving an open economy is a key objective of the Union. The Covid-19 pandemic has demonstrated how important it is for European governments, businesses and citizens to remain independent in areas identified as strategic to ensure diversity of production & supply chain, foster production, jobs and investment in Europe.

Technological sovereignty is one way, outlined in the new industrial strategy for Europe, to reach this (industrial) strategic autonomy goal. If the development of an EU autonomy in the space sector and of a more integrated defence industrial base are considered as critical technology areas in this context, aeronautics is still not considered as such. Europe urgently needs to act now to consider Aerospace & Defence in a holistic manner to keep its leadership and avoid losing its edge against two superpowers that are both seeking supremacy in this sector.

Cross-fertilization between aeronautics, space & defence is of the essence. All stakeholders in the sector are active in both civil and defence sectors, with so-called "dual use" products, software and technology. Industries such as aviation, electronics, transport and space have benefited significantly from the technological solutions first developed in the defence sector. Today this relationship goes both ways, with innovative high-tech products also flowing back into the defence sector from the civil industry. Technologies at the heart of the geopolitical competition between the US and China are being developed commercially, not just militarily. Innovation spills over from one part of the business to another, as well as outside of the defence industry, contributing to the wider economy. Europe today stands to benefit from the combined excellence of the various parts of its aerospace & defence base.

For the US, the technological race with China is about maintaining an economic and militaristic edge against a systemic rival in a battle that could have societal implications. Europe is rightly not following the exact same approach. But enhancing Europe's technological leadership and strategic autonomy will require a strengthening of its industrial and innovation capacity as well as investment in human capital and skills - especially in strategic ecosystems like aerospace & defence - to cope with this new geopolitical outlook. It is important for the EU to develop, deploy adequate digital capacities and infrastructure to support the sector's digital & green transition.



Picture: Illustration of the Future Combat Air System (FCAS)

The Defence industry is recognized as critical for Europe's ability to act independently and decisively in the realm of defence and security, while the space industry guarantees Europe's access to space. As for aeronautics, industrial strategic autonomy goes with leading the Green revolution globally. It is capable of being at the cutting edge of technology leadership to address Green Deal ambition for Europe to be the first climate neutral continent by 2050. The aeronautics sector has multiplied its efforts throughout the years to drive and accelerate a transition of the air transport system towards climate neutrality. It continues to innovate and is currently working on novel concepts, including hydrogen, hybrid technology, electrification, to name a few.

Aerospace & Defence as a whole can help Europe become more sustainable, more competitive globally and more resilient. The sector is capable of uniting Europe around structural projects contributing to its strategic autonomy. It is a symbol of Europe that works, making people dream around space, sustainable smart cities, manufacturing satellites, aircraft, and engines. It can foster a renewed European ambition linked with innovation, new technologies. A new "raison d'être" for Europe, to cultivate hope and pride.

Implementing the **European Defence** Fund and the Action Plan on Military Mobility

MICHAEL GAHLER

MEP (EPP Group),
Member of the SEDE Committee

The last four years following EU's global strategy 2016, we achieved substantial progress towards our common goal of a European Defence Union. Especially with regard to the increasing numbers of crisis and conflicts, the re-emergence of power politics and a currently difficult transatlantic partnership, a capable European Defence Union is needed more than ever to contribute to our citizen's security.

In that regard, the creation of the European Defence Fund (EDF) in 2017 marks an important step forward that aims at improving EU's military capabilities by facilitating joint research and development. The initial EDF for the period 2017 to 2020 provides a budget of €90 million for research projects exclusively financed by the EU and €500 million to co-finance capability development with the EU member states which provide 80% of funding. This first EDF is implemented through the Preparatory Action on Defence Research (PADR) and the European Defence Industrial Development Programme (EDIDP). Until today, 18 research projects have been launched within PADR. The seven projects launched this year cover a range from research on electromagnetic railguns, quantum communication and navigation to interoperability of unmanned systems in which 65 companies and research institutes from 15 member states participate. The EDIDP is structured along 19 capability categories within five clusters that cover inter alia operation enabling capabilities, intelligence and communication, ground and air combat capabilities, artificial intelligence. The EDIDP also contains a dedicated budget of €17,7 million for projects of Small and Medium Enterprises. By building on the Capability Development Plan and contributing to projects within the Permanent Structured Cooperation (PESCO), the EDIDP ensures coherences between the different EU defence initiatives. For example, within the EDIDP budget €137 million are designated to support the PESCO projects for the development of a European remotely piloted air system and secure defence communication systems.

While we achieved quite some progress in the area of joint capability development through the initial EDF programs and PESCO, an effective European security and defence policy requires also the means to deploy these capabilities as addressed by the Action Plan on Military Mobility published in March 2018. As the plan points out, military mobility does not only consist of developing and maintaining a transport infrastructure that fits to military requirements but also of harmonization of customs, border and tax regulations as well as agreed procedures between EU and NATO. The development of the physical infrastructure is mainly implemented within the Connecting Europe Facility that finances dual-use infrastructure projects while the harmonization of regulations and procedures takes place in various settings: Since 2018 24 member states are cooperating in a PESCO project under Dutch coordination to simplify and harmonize cross-border military transport. Additionally, following the joint EU-NATO declaration in 2018 which defines military mobility as a main area for cooperation, a structured dialogue between EU and NATO with several regular meetings per year was initiated. In May 2019, the European Defence Agency, being responsible for monitoring the progress on military mobility, launched another project aiming at the harmonization of cross-border administrative procedures with a focus on surface and air movements in which 23 Member States are participating. With this project, EDA builds on two older projects on EU Transport Hubs and on diplomatic clearances in the context of the European Air Transport Fleet. Furthermore, in 2020 two legislative acts were adopted to facilitate military mobility and improve coherence to NATO standards: In January, the European Council adopted a directive on VAT exemptions for supplies to armed forces operating outside their home country and in July the European Commission amended the Union's Customs Code introducing the "EU form 302" which like the NATO form 302 regulates the movement of goods in the context of military operations.

The various EDF projects and the different initiatives on military mobility as outlined above illustrate that the implementation of the European Defence Union moves forward. However, we are still at the beginning of this process and the progress achieved so far can only be considered as a point of departure. We need to build on this foundation in order to achieve our declared level of ambition. Unfortunately, the European Council does apparently not share this perspective as illustrated by its budget proposals which undermine the long-term goal of a European Defence Union. That becomes most visible in the proposed budget lines for the next EDF and military mobility. The Commission's initial proposal for the EDF of €11,45 billion has been cut down to €7,01 billion and funds for military mobility were reduced from €5,76 billion to €1,5 billion. To justify these cuts with the efforts needed to recover from the COVID-19 pandemic is simply short sighted. Investments in defence also contribute to economic recovery which applies to investments through the EDF that supports a high-tech industry and even more to investments in military mobility. Considering that civilian and military infrastructure needs overlap to 94%, the civilian economy would be in the first line of beneficiaries. Accordingly, my colleagues and I in the European Parliament engage in the current negotiations for a defence budget that safeguards Europe's strategic interests and the security of its citizens.

Advocacy for more investments and less naivety in **European space policy**

CHRISTOPHE GRUDLER

MEP (Renew Europe Group), Member of the ITRE Committee, Vice-President of the Sky&Space Intergroup, Vice coordinator Renew of ITRE Committee

In recent years, space technologies have proven indispensable in several aspects of our lives, from farmers monitoring the soil quality to travellers visiting a new city or even crisis situation management.

In this field, the European Union has shown a capacity to be a front-runner when it comes to the deployment of innovative space technologies, with Copernicus (the leading provider of Earth observation data), EGNOS (navigation services to aviation, maritime and land-based users over Europe) or Galileo (Europe's global satellite navigation system). Thanks to its strong space industry, the EU is one of the leaders in space technologies and data.

But Europe faces stronger competitors and its ability to secure an independent access to space is constantly being challenged, so much so that we are now embarked in a new "race for space", alongside the US, China, Russia and India. To win this race, and to maintain a strong and innovative space industry that allows Europe to adapt to this new reality, I see two priorities:

First, the EU needs to commit to expanding its investment capacity in the space sector.

Yes, the European space industry is one of the most successful in the world. Yes, one third of the world's satellites are manufactured and produced in Europe. Yes, the Ariane launchers are still some of the most reliable rockets available.

And yet, in the 21st century, when space is the new confrontation ground, Europe often falls short. The reality is that Europe's budget for space is light years away from the US's spending, with China's budget is rising quickly. This is why we need a more ambitious European space budget, not a less ambitious one. Unfortunately, the latest budget proposal presented by the European Council does not take this new reality into account.

Secondly, we should be less naive.

Why is it that a number of Copernicus satellites are still launched with Russian *Rokot* rockets? This is one in many discrepancies that go against European interests. If we want to forge a lasting European space industry, we need to be able to support it with guaranteed purchase orders. Similarly to what the US are doing, we need a "European preference" for public tenders in institutional space missions.

Defending our industrial base means using it. This is key to the development of Europe's strategic autonomy.

Being less naive also means channelling more investments in military space technology. Europe excels in civil space technologies, but lacks a real space defence strategy. We lack capacities for threat detection and countermeasures to protect our satellites. We lack robust and secure communications satellites. It is time for the EU to develop a real programme for military satellites. Our strategic autonomy depends on it.

As such, Europe has an opportunity to shine in the field of satellite constellations, particularly with quantum satellites. European technology is well ahead in this field, and we must take advantage of it. This could help fill in blank spots, while providing a higher level of security for European governments, companies and citizens.

I am happy to see that space is high on the agenda of the European Commission. Commissioner Thierry Breton recently stated that « access to space ranks as one of the top priorities for the years to come». The determination of the Commission is welcomed and I hope we will quickly be able to strengthen Europe's space industry, and by the same token, its strategic autonomy.

But let us not forget that without an adequate budget, and without a realistic and pragmatic approach, the EU space policy bears the risk of losing its shine.

VINCENT **LEDOUX PEDAILLES**

Vice President of Vulcan Energy

Vulcan Energy: **Decarbonising** and de-risking the European Electric Vehicles Supply Chain Starts with **Lithium**

As the world positions for a more sustainable future, mining of lithium will continue to rapidly grow, and so too will OEMs and policy makers demand for greener processing practices.

Europe is set to become the second largest consumer of lithium in the world after Asia following a dramatic growth in electric vehicles (EV) production. Today, there is actually more investment going into electric mobility in Europe than in China. Those EV require lithium-ion batteries and Europe has also become the fastest growing lithium-ion battery production centre in the world.

But Europe is facing a major problem. Despite the EU's stated goal to develop a fully integrated supply chain locally, there is currently zero lithium extraction and production here and Europe will have to rely entirely an imported material, 80% of it coming from China. But sourcing from China poses two major and obvious issues: supply chain risk and environmental impact.

On the supply side, de-risking supply-chains is crucial following rising tensions in international trade but also following events such as Covid19 which showed that Europe is massively dependent on China for vital supplies ranging from pharmaceuticals to lithium.

On the environmental side, CO_2 emissions linked to lithium production in China are the highest in the world and does not match with automakers' goal to become carbon neutral. Simply maintaining current production techniques could be defeating the purpose of clean Electric Vehicles. Calculations suggest that if we convert every single traditional car into an EV, and that the lithium-ion batteries fitted in those EVs use material produced by existing production methods (Extracting hard rock in Australia, shipping on large vessels to China and then processing in coal-fired operations) then lithium production alone will generate more than 1 billion tons of CO_2 emissions. That's more than the annual CO_2 emissions of the UK, France and Italy combined.

Driving an EV is not enough to decarbonize the world, we need to look at the entire supply chain, starting with mining, and shake the industry up from the core.

Vulcan Energy Resources is a company aiming to decarbonize the currently high carbon footprint of lithium-ion batteries used in electric vehicles, by producing a unique, world-first Zero Carbon Lithium™ product from its Vulcan Project in Germany. The company will be producing both battery grade lithium and renewable energy from geothermal brines located in Germany. The project is actually located in the centre of the automotive and lithium-ion battery industry, just 60km from Stuttgart.

The only alternative for European lithium consumers today, even they don't want to purchase lithium from China, is to source it from South America. However, brine operations using evaporation ponds in Chile and Argentina are also linked to a number of environmental concerns including CO_2 emissions but mostly water waste, in a place which the driest on earth, where water is precious. Environmental associations and indigenous communities have been fighting against lithium mining in this region for years. It is difficult to see how lithium mining in this part of the world will keep growing and feed international demand for sustainable lithium without facing major hurdles

Vulcan's production method is radically different. Geothermal production is already well developed in Germany and globally but the difference in Germany and more specifically in the Upper Rhine Valley, is that the hot brine that is extracted from the ground contains a high concentration of lithium. It is something that can only be found in two places in the world: in the Salton Sea in California, and in this region of Germany.

The hot brine extracted from the ground generates steam that powers turbines and produces renewable electricity, most of it is sold to the grid and the rest is used for Vulcan's own process. Instead of just reinjecting the brine into the ground after the renewable energy has been generated, the brine flow is diverted and lithium is extracted from the solution using a Direct Lithium Extraction process. Once the lithium has been extracted, the brine is reinjected in the ground with no waste. The process only takes a few hours instead of months, and is not dependent on weather like in South America.

But most importantly the process has a negative cardon footprint because it generates more green electricity than it consumes. This is a unique process that will satisfy OEMs' stated goal to source zero carbon and sustainable raw materials for Electric Vehicles.

And the project has scale. Vulcan has the largest lithium resource in Europe and one of the largest in the world with so far more than 15 million tons of lithium identified, enough to power more than 300 million EV, and large enough to become Europe's primary source of battery quality lithium hydroxide.

The project is already supported by the EU with a recent investment secured from InnoEnergy, the group steering the European Battery Alliance.

Vulcan advancing very rapidly, they have published a scoping study in February and will be releasing a Pre-Feasibility study by the end of the year. The company is currently working on a pilot plant design that they will be operating next year and are aiming to start lithium production in 2023 and grow with the European EV market.

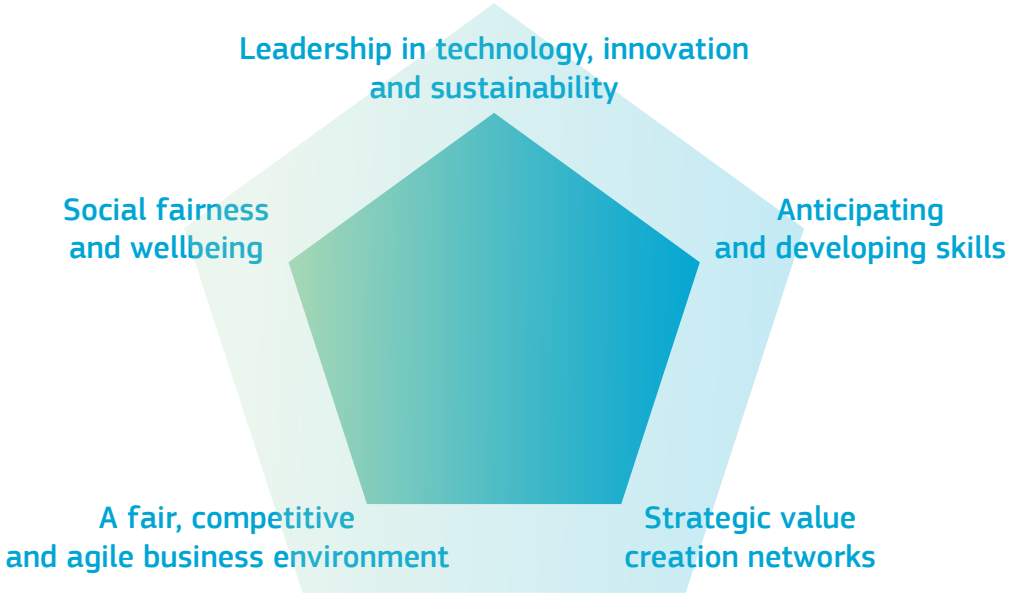
VISION FOR INDUSTRY 2030

REPORT BY INDUSTRY 2030
HIGH LEVEL INDUSTRIAL ROUNDTABLE

In 2030, European industry will be a global leader, responsibly delivering value for society, the environment and the economy. Europe will build its competitive advantage on cutting-edge and breakthrough technologies, respect for our environment and biodiversity, investment in our people, and smart European and global alliances. Based on collaboration and our common European values, this new industrial model will help to make Europe a role model for the rest of the world.

The European Commission proposed setting up the Industry 2030 high level industrial roundtable in the 2017 renewed Industrial Policy Strategy to provide independent advice on future EU industrial policy action. The Vision for Industry 2030 is their contribution to this ongoing debate.

A new European industrial model must adopt an integrated approach to respond to a series of specific and interconnected challenges facing our industries.



Five key drivers to achieve the Industry 2030 vision


ENABLE
PEOPLE
TO SHAPE
A SAFER
FUTURE
BY CARING
FOR THEIR
LIVES AND
DREAMS.
GENERALI