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EUROPE'S STRATEGIC AUTONOMY:

A NEW POLITICAL AMBITION?

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EDITORIAL

EUROPE'S STRATEGIC AUTONOMY: A NEW POLITICAL AMBITION?

Strategic autonomy is the result of a process of political and economic survival for Europe.

Indeed, the major geopolitical, sanitary, and economic upheavals, in recent months have made us aware of the urgency to reduce Europe's dependence and strengthen our resilience and competitiveness vis-à-vis the rest of the world.

Europe's approach is based on the development of strong and integrated industrial ecosystems to accompany and accelerate the transition to green and digital economies.

Securing our economy also means guaranteeing the supply of critical resources: the production and use of hydrogen, batteries, semiconductors, healthcare products, data storage with the development of the cloud, and the strengthening of capacities in security, defense, and space - all of which is at the heart of the European strategy to strengthen its industrial autonomy.

In order to reduce our dependence and boost our competitiveness, the EU has launched a new series of initiatives: projects of common European interest (IPCEI), alliances, and investment plans to shape a new growth model.

To reinforce the EU's leadership, the European Commission is putting in place a series of regulations to reconcile economic development and climate ambitions. Indeed, to guarantee investments in innovation and to develop new sectors such as environmental technologies, we need to set standards to lay the foundations for true technological sovereignty in Europe. We must also increase our efficiency in the use of resources and move towards a more circular economy.

The digital transition has accelerated during the pandemic period.

Today data is a crucial pillar of the European digital economy and will be the key to future innovation and economic growth.

The digitalisation of our economy has dramatically transformed our environment and also created new risks. With a connected single market, the creation of a European cyber security system is an absolute necessity.

These challenges also lead us to intensify our efforts in the fields of defense and space. Providing EU countries with additional possibilities to enhance their technological, industrial, operational, and political capacities naturally feeds into the strengthening of their position internationally. It is also about preserving our access to space which has become essential for the functioning of our societies: "Without space sovereignty, there is no technological sovereignty," said President Macron recently.

In 2021, the first pillars of the construction of the European Health Union have been put in place with strong measures such as the strengthening of the capacities of the EMA, the ECDC and the creation of HERA to increase resilience to cross-border health threats.

The pharmaceutical industry is indispensable and of critical importance for the European Union both in terms of innovation and economic recovery. The next revision of the pharmaceutical package aims to meet this challenge.

In this issue, the contributors will present their thoughts on critical and strategic industrial sectors. Europe must work to optimize its needs and secure its supplies. It must diversify its global resources by creating resilient value chains to guarantee more sustainable supply. In addition, it must invest heavily in critical technologies while building a strategic reserve. We have entered a new industrial era, where global value chains become geopolitical instruments. A political paradigm shift in Europe is needed: "There is no political sovereignty without technological sovereignty".

Editor-in-Chief
LAURENT ULMANN

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It is time for **Europe** to **build** its **strategic autonomy**

AGNÈS PANNIER-RUNACHER
French Minister Delegate for industry

FRANCE22

The crisis we have been and are still going through, has taught us a lot.

During the Covid-19 crisis, our European vulnerabilities have been exposed in broad daylight. Vulnerabilities regarding health products, as 80% of the active substances in our pharmaceuticals are imported. Vulnerabilities regarding electronics, as we are lacking microchips, essential for our cars, planes, or any electronic device we manufacture in European Union.

Those weaknesses can impair our citizens' wellbeing and disrupt our companies' production chains and the workers that rely on them. At the end of the day, they are always the ones who pay the price, with delivery delays or price increases.

Nowadays, especially with the unpredictable developments of the war in Ukraine, we are confronted to the crucial need to strengthen our Union: for our economy, for our energy and food independence. For peace.

It is urgent. Our continent is at a crossroad; geopolitical, economic, environmental and industrial crossroad. If the European Union and its member states wish to remain in the international competition, and if we want to be able to react to another shock, we need to build a new model based on an open strategic autonomy.

"Strategic autonomy" is not an abstract concept. And I want to make it very clear, "strategic autonomy" is not protectionism. It is about being more resilient when it comes to fulfilling the basic needs of our citizens, such as housing, heat, food, health….

To build our open strategic autonomy, our single market is a very strong foundation. We have a very wide market of 450 million consumers, with demanding environmental and social standards. This market is our key asset to build up future growth: we need both to reinforce it, as well as to ensure fair competition with companies from third countries.

For the past two years, the European Union stepped up and made great step toward a more efficient Union capable to provide quick and massive answers to the unprecedented events we had to face and are still facing. It is great progress in the history of the European Union. It is undeniable: we need more Europe to be able to reach our goals and protect our citizens. We have a more comprehensive set of European levers thanks to these past years; It is a very good basis to build upon to reinforce our strategic autonomy.

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Our main assets are the Important Projects of Common European Interest, the IPCEI. They will enhance our common ability to innovate, and accelerate the transformation of our value chains while relying on the very best of our SME's and our medium-sized companies.

We started with two IPCEI's on microelectronic and electric batteries. And it has been a huge success. On electric batteries, when we started, many said we should rather rely on others than even trying to build our own capacities. But in two years, Europe became the first continent in terms of investment in new generation electric batteries.

We intend to go further. That is why, during the French Presidency of the European Union, we are moving forward on four projects of industrial cooperation.

First, an IPCEI on low-carbon hydrogen. It is a subject on which the European Union can become a world leader. It is also a crucial matter regarding our environmental objectives and the need to decarbonize our industry. Secondly, we launched an electronic IPCEI, which has been broadened to the subject of "connectivity" because we also need

to invest massively in 5G and 6G. We also launched a *Cloud* IPCEI. Looking at the international situation, it is certain that the *Cloud* is a strategic issue for the future of our continent. Finally, we need to grant our citizens access to the health sector's breakthrough innovations of, such as genic biotherapies or bio-productions. It is the purpose of the *Manifesto* we signed, in Paris, on the 3rd of March along with 16 other Member States, to proclaim our will to launch a new IPCEI on health. Starting in June, it will allow our continent to cooperate and bring the best innovations to the European patients and hospitals.

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But, beyond these industrial cooperations, our strategic autonomy is also being challenged on two crucial matters: critical raw materials and semi-conductors.

Critical raw materials, in the first place. They are vital in high technology applications for automotive, renewable energy, defense and space. For example, regarding what I said earlier, we crucially need nickel, cobalt and lithium for the electrification of our European vehicle fleet. Our countries, our continent won't be able to fulfill the environmental and digital transformations whilst we only control 2% of the metals needed for it. And we cannot geopolitically nor economically allow ourselves switch from a dependency to fossil fuels to a dependency to critical raw materials.

This is why, on the 31st of January and 1st of February, in Lens, I held an informal Competitiveness Council, mainly focused on the issue of our dependency to critical raw materials. Those two days enabled us to find common grounds on three main objectives: securing extra-European supply sources for raw materials, developing recycling and circular economy to keep the resources in Europe, and innovating, producing and extracting domestically those materials.

We are also building our strategic autonomy on the matter of semi-conductors. Last month, the European Commission presented the content of its 43 billion euro plan to produce, by 2030, 20% of the world's microchips in Europe. This ambitious plan, the *EU Chips Act*, lays out a complete European strategy in Research and Development for semi-conductors, a framework for international cooperation, and a plan to support the increase of our production capacities. It is a crucial plan for our technological autonomy.

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But, all of these actions and industrial cooperation, will only work if we strengthen the European Union and be pragmatic. If we finally choose to set the rules for loyal and fair competition, for a true "level playing field". If we stop letting our companies suffer from those with lower environmental and social standards in low-cost countries.

The first tool to build this level playing field, is the Carbon Border Adjustment Mechanism. It will help us stem carbon leakage. Today, the risk is that we continue having on the one hand important investments required for the reduction of carbon that reflects on the prices, and, on the other hand, the increase of our imports from countries with lower standards. It results in a double defeat for both the climate and the economy: more carbon footprint and less industrial jobs.

The second tool is the Commission's proposal for a regulation on distortive foreign subsidies. It would enable us to restrain access to our single market for the companies that benefit from foreign subsidies. In Brussels, during the last Competitiveness Council of the 24th of February, with my European counterparts, we agreed on the need for progress on this important regulation, and the French Presidency will be instrumental for that.

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The European Union's strategic autonomy is crucial. It is crucial because it challenges our ability to master of our own fate and our courage, as leaders, to confront our weaknesses and dependencies. It will decide whether we live up to the great issues of the century: the double digital and environmental transformation, but also the returning of the tragic times of history. And it is only at the European level, as Europeans, that we can face those stakes.

Resilience via Openness – Europe's Unique Approach

VALDIS DOMBROVSKIS

Executive Vice-President for An Economy that Works for People, European Commission

A strong European Union requires a strong trade and investment policy, to help protect our interests and secure our position as the world's biggest trader.

Consider the facts: Our trade in goods and services represents 16.8% of global trade. This is notably higher than our share of world GDP, which stands at 15%.

Exports support 38 million EU jobs, up by 11 million since 2010.

This represents growth of 42%. Over the same period, total employment in the EU grew by only 6%.

These facts are worth repeating, because it's sometimes forgotten just how much Europe benefits from free, fair and rules-based trade.

Looking to the medium term, an open approach will become more even important, given that 85% of global GDP growth will happen outside the EU in the next 5 years.

We need to connect to this growth, giving our companies every opportunity to grow, innovate, and create the jobs to drive the green and digital transformations of our economy.

Of course, our trade policy must also evolve to address new challenges and risks.

At the multilateral level, the World Trade Organisation is in crisis. It operates according to a rulebook written in 1995, and needs urgent root and branch reform to maintain its global relevance.

Trade policy needs to catch up with the rapid digitalization of our societies and economies.

And our citizens expect trade policy – like all EU headline policies – to make a greater contribution to climate action and sustainable development.

Furthermore, in today's world, trade and investment are exposed to the increasing volatility of international relations.

The Russian aggression in Ukraine and China's recent coercive measures against Lithuanian and European exports are perfect examples of this trend.

Faced with this reality, EU trade policy is taking strong and appropriate steps.

First and foremost, we want to update multilateral trade rules to reflect today's reality. That is why we are among the strongest proponents for WTO reform, and we are working hard to build a consensus in support of this goal.

At the same time, we also recognise that we need stronger tools of our own to defend our legitimate interests and values.

We must become more assertive in enforcing our rights and defending ourselves against the unfair practices of others. These unfair practices have escalated in recent years. We need to shore up our protections, so that competitors cannot take undue advantage of our openness.

That is why we proposed a new Anti-coercion Tool - a powerful trade instrument to help us in situations where we are confronted with unfair economic intimidation.

We also came forward with recent proposals to strengthen our hand in dealing with foreign subsidies and international procurement.

These initiatives make us stronger, and allow us to be more assertive.

Our approach, in short, is to act multilaterally whenever we can, but unilaterally whenever we must.

Greater assertiveness must not come at the cost of openness, because this has been the source of our economic and political strength since the beginning of European integration.

In today's world, the most credible approach for Europe's unique circumstances is therefore one of "*open* strategic autonomy".

Openness is the foundation of our economic success, the key to our future resilience, and a vital means of geopolitical leverage for our wider goals.

To illustrate this point, consider the EU Green Deal, our ambitious climate plan. It sets ambitious binding targets for the EU 27.

In reality, of course, this is not enough, because climate change does not end at our borders.

Real change can only happen if we also encourage our global partners to change.

This is where the true strength of our global network of trade deals comes into play.

The EU is the number one trading partner for 74 countries around the world, compared with 64 for both the U.S. and China.

By engaging with our partners, by re-affirming our openness, we achieve results.

We have seen noteworthy outcomes on labour rights, arising from our bilateral deals.

When our partners sign trade deals with us, they commit to implementing internationally recognised core labour standards.

This has led to positive achievements such as the ratification of three ILO conventions in Korea, a new Labour Code in Vietnam, and new labour inspection laws in Georgia.

However, we are mindful of the fact that our trade agreements have the potential to do more, particularly on climate and sustainability outcomes.

We are taking steps in this direction in the coming months, with a number of new initiatives on trade and sustainability.

Openness is our guiding light as we seek to be a global climate leader.

Of course, this open approach must be monitored closely for any weak points, and adjusted where appropriate.

As an example, there have been supply chain challenges in recent years, with imbalances in some specific sectors, notably for semiconductors and certain raw materials.

Yet, when we took a closer look, it transpired that trade openness was actually important for expanding the range of alternative sources of supply.

We should therefore focus our attention and resources on addressing our small number of strategic weak points, while staying fully integrated in the global economy. Our economic competitiveness and resilience depend on it.

THIERRY **BRETON**

EU Commissioner for the Internal Market

Boost Europe's resilience: on a management of interdependence in global supply chains

The pandemic has shed a harsh light on the geopolitics of supply chains. Europe is finally taking the measure of how asymmetric interdependences are jeopardising the resilience of the Single Market and of industrial ecosystems. Redrawing the balance of power is an arduous process that relies on diversification but not only. It entails a multi-fold response for which the European Union is paving the way.

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Over two thirds of the European cloud market are concentrated in the hands of a few American providers while 96% of solar wafers are produced in China. This goes to show how Europe's path towards digital leadership and green transformation is strewn with over-reliances. From basic raw materials, such as magnesium, to high-tech products, like semi-conductors, we need to take our industrial and economic destiny in our own hands. Times are changing: for the past two years, Europe has been updating its software, based on a more assertive industrial policy to help us tackle our dependences more effectively.

Managing our dependences starts with understanding them better. In its 2021 industrial strategy update, the Commission undertook an unprecedented in-depth analysis of Europe's dependences in the most strategic sectors, such as critical raw materials, active pharmaceutical ingredients or semi-conductors. We are keeping up the pace: in a few weeks, we will present new in-depth analyses for additional key sectors, such as solar panels, cybersecurity, construction products or streaming services. Only with this crucial knowledge will we be able to anticipate and provide adequate policy tools to address disruptions and shortages along supply chains.

Among these policy tools, diversification is key. The European Union can team up with international partners to strengthen supply chains and diversify imports. We can already draw from a great deal of experience diversifying our sources of supply, for example the strategic partnerships on raw materials with Ukraine and Canada. Cooperation with African countries has also gained momentum with the recent EU-African Union Summit, where both continents committed to laying the ground for more integrated, sustainable and resilient raw materials value chains.

In parallel, it is paramount that Europe also invest in its own industrial capacities. To this end, industrial alliances have proved to act as catalysts for identifying the most pressing needs - in particular in terms of investment – and for championing the most game-changing projects, including Important Projects of Common European Interest. This collective effort is bearing fruit: on batteries, for example, Europe has invested three times more than China in the last few years, with twenty gigafactories coming up. Regarding hydrogen, 750 projects are now in the pipeline, ready to emerge by 2030, while in the cloud sector, 40 European IT companies have devised a roadmap to develop the next generation of data processing technologies.

When striving to pool the right resources for the right projects, Europe should also pay particular attention to deep tech capital venture, often a decisive factor for scaling up breakthrough innovation and staying in the technological race. With only 7% of the global cohort of unicorns based in Europe, we are still lagging behind. The European Innovation Council, created last year under Horizon Europe, should help us close the gap: only for 2022, 1.7 billion euros will give innovators a strong leg-up to take their technological knowhow out of the sandbox and create new markets, for example in quantum computing, the next generation of batteries and gene therapy.

We have entered a new industrial era, where global value chains become geopolitical instruments. Europe is ready to defend its interests. Prevention of distortive foreign subsidies, foreign direct investments screening mechanism, anti-coercion instrument, standardisation strategy: the Commission is gradually fleshing out Europe's regulatory arsenal against ill-intentioned or inhibiting third countries. These measures express a more assertive and worldly stance, already perceived last year when the Commission put in place a vaccine export-control scheme, to offset the "America First" vaccine strategy and lift the ensuing blockages that were hampering the fight against the pandemic. The rebalancing of global supply chains is on track.

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Addressing dependences requires a 360° policy angle, based on constant monitoring, partnerships, strategic investment and a robust regulatory framework. The Commission's proposal for a European Chips Act, presented in February, epitomises this comprehensive approach. Accelerating the transition from research to the factory, investing in European mega factories, promoting international partnerships, ensuring security of supply in case of crises: our entire toolbox is mobilised to create a state-of-the-art European chip ecosystem.

Openness, but on our conditions: this is Europe's management of interdependence in global supply chains.

Increasing Europe's **energy autonomy**

KADRI SIMSON

EU Commissioner for Energy

Since taking office at the end of 2019, this Commission under President Ursula von der Leyen has taken a range of important initiatives linked to the clean energy transition. The European Green Deal was foreseen as the main flagship initiative. With this in mind, last year, the European Commission tabled concrete moves for taking things forward and achieving significant advances in this decade – with proposals for raising the ambition of EU rules on renewables, on energy efficiency, on the energy performance of buildings, reducing methane emissions, and updating market rules for decarbonising the gas sector. Taken together with parallel measures in other policy areas, we estimate that these measures can reduce our greenhouse gas emissions by 55% by 2030. This is why we sometimes refer to these measures as the "Fit for 55" package. And we are already working closely with the French Presidency of the Council and the European Parliament to take these dossiers forward.

The Russian invasion of Ukraine has taken this already massive challenge to a completely new level, however. Putin's war has made it absolutely clear that we need to move even faster, to reshape the European energy system and end our dangerous dependency on Russian fossil fuels as soon as possible.

This is not the first time we face this truth in the EU. Since 2009, when Russia stopped gas deliveries to Ukraine, we have worked hard to diversify our supplies. That year, LNG imports were just over 4 billion cubic metres (bcm) per month. Now, it's 10 bcm with potential to grow. Since 2009, eight new LNG terminals have come online in the EU.

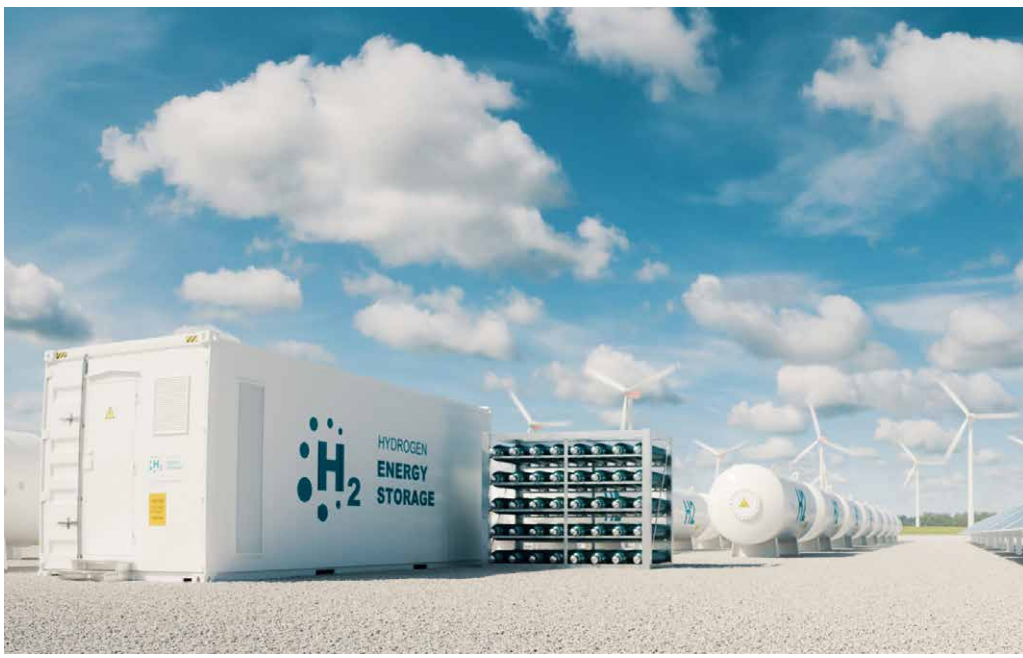
Thanks to these efforts, we are in a much better position than we were five or ten years ago. But we are not yet where we need to be. In energy, things take time and the urgency to give up Russian gas was perhaps felt more strongly in some Member States than others. Putin's actions have made this urgency felt across the EU. We all agree that affordability, sustainability and security concerns in the long run have the same answer: the Green Deal. But juggling these three goals will not be easy.

First, let me address what we need to do now, in the short-term. We need to protect our people and businesses from the impact of exceptionally high prices. Energy prices have been surging since last autumn, aggravated by Gazprom's unusual behaviour on the market - keeping gas flows low despite high prices. Russia's aggression against Ukraine has added to the price pressure. And markets are also nervous about the risk of Russian retaliation.

In October, we adopted a toolbox of measures, identifying options for targeted support, state aid and fiscal measures that could be introduced at national or EU level. Every Member State has already taken up or is planning to take up some of these options. But as the situation has evolved, it's no longer sufficient.

As a further response, also to the Russian aggression in Ukraine, we published a new Communication on March 8, which looks at the way forward. In these extraordinary circumstances we are facing now, Member States can regulate electricity prices for households and micro-enterprises. This is an option that the EU framework already allows and the March 8 document provided detailed guidance on how to design these schemes.

The Commission will also launch consultations with Member States on a new Temporary Crisis Framework for State aid – similar to the one introduced to mitigate the impact of COVID. This could allow them



to compensate businesses for part of the increase in energy costs related to the Russian invasion.

To put these support measures in place, Member States need funds. In this new document we confirm that they can consider introducing a temporary tax on windfall profits created by the exceptionally high electricity prices. Here as well, we have published guidelines for how this can be done.

Member States can also use revenues from the Emissions Trading System (ETS). From January 2021 to February 2022, emission trading has generated €30 billion for national budgets. This can be channelled to support consumers in these difficult times.

Another immediate concern is to make sure that Europe is ready for an interruption of supply. We have assessed possible scenarios for partial and full disruption of gas flows from Russia. Thanks to the mild weather and increased LNG supplies, we expect to be on the safe side for the remaining weeks of this winter: but we need to get ready for the next one.

For that, it's crucial to ensure that our gas storage is filled when the next heating season starts. In April, we will propose legislation to require that the storage is at least 90% full by the beginning of the heating season. The proposal will also identify gas storage as critical infrastructure and tackle ownership risks.

Looking ahead, there is a clear need for a more coordinated EU policy on gas – on buying and storing, and also diversification of supply is important and improving infrastructure, as we move away from Russian gas.

This is what we will do under the REPowerEU initiative, outlined on March 8. LNG deliveries to the EU have already massively increased, but there is room – and a need – for more. As we are not ready yet to give up gas entirely, we must make sure that as much of it as possible comes from non-Russian sources.

The other side of the coin is reducing the need for fossil gas in the first place – by boosting alternatives and saving energy. This means more biomethane and renewable hydrogen, more renovation, heat pumps and solar panels on rooftops. It also means getting serious about saving energy, which should become everyone's contribution to solving this current crisis.

At the same time, we cannot talk about a renewables revolution if getting a permit to build a wind park takes seven years! It is time to treat these projects as being in the overriding public interest – because they are. We will propose that Member States create go-to areas that are particularly suitable for renewable projects. We need to speed up permitting for renewable energy projects. Another initiative will be looking to facilitating Power Purchase Agreements. But in all areas we should be ready to consider changing our current rules, if they are holding us back.

Already with last year's "Fit for 55" proposals, we tabled measures that, once implemented, will reduce the EU's total gas consumption by 30% by 2030. With the additional drive outlined on March 8 - front-loading our investments, diversifying our energy supplies away from Russian fossil fuels, and working more closely together at EU level – we estimate that we can reduce our energy imports from Russia by two thirds by the end of 2022. This will end our over-dependence on Russian gas and help us repower Europe.

Strengthening Europe's **competitiveness** and **strategic autonomy**

TYTTI TUPPURAINEN

Minister for European Affairs, Finland

The challenges of today call for a strong European Union. They call for a Union capable of solving global problems and responding to a variety of challenges both swiftly and resolutely. Climate change, the COVID-19 pandemic, and the current instability caused by Russia have all highlighted the need to strengthen the Union's crisis preparedness – to strengthen the Union's resilience and strategic autonomy.

Yet strategic autonomy must not be mistaken for protectionism. If understood in the right way, increasing the EU's strategic autonomy is both valuable and necessary. However, if we start to envisage a Europe that does not seek to shape global competition but seeks to protect itself from it, strategic autonomy ends up on the wrong track. Creating a "Fortress Europe" would not result in economic wellbeing.

I firmly believe that the development of EU's strategic autonomy should be based on three key issues.

Firstly, on the full respect of the principle of rule of law – the very foundation of our Union. The EU is a community of the rule of law, built on common values. This is unquestionably enshrined in EU treaties. Yet rule of law is not simply a question of idealistic principles, but has also concrete effects. It is about the smooth functioning of the internal market, and it is about safeguarding mutual trust. We must defend the Union from ideological and authoritarian tendencies, which have in the last years become all too familiar both in our immediate neighbourhood and, alarmingly, within the union. Only by nurturing our values can we truly defend the European way of life.

Well-functioning institutions, public confidence in authorities, and rule of law create resilience. As democracy is challenged around the world and conspiracy theories spread, the EU must uphold the UN universal values and take global leadership in promoting them. Leadership on values gives us strategic autonomy.

Secondly, the EU must develop its competitiveness based on its own strengths. Our key strength lies in the achievement that we should never take for granted: the internal market. Furthermore, our economic wellbeing is heavily dependent on rules-based, open world trade. European trade policy must seek solutions that avoid protectionism and the dichotomy of a global economy shared between the United States and China.

When considering strategic autonomy, we must remind ourselves of the whole range of lessons learnt in the COVID era. I wish to stress that without global supply chains, we would not have been successful in ensuring a swift response for vaccination: globally operating vaccine companies were able to develop new vaccines in record time. Furthermore, Europe benefited from companies with global subcontracting and production chains that also had the ability to export ready-made vaccines worldwide.

When it comes to strategic autonomy and trade, in today's world, there are also further questions to consider. We must ensure that open and rules-based trade advances EU aims – EU values – related to environmental aims and human rights.

Furthermore, we must not forget the internal aspects related to the EU's competitiveness. It was certainly necessary to create flexibility in the internal market and state aid rules during the pandemic. However, now that recovery is well underway, we must return to normal competition policy: clear and effective rules for state subsidies or for preventing abuse of dominant positions in the market. Only a truly competitive EU can be an economic power with global weight.

Thirdly, for achieving real strategic autonomy, we must also develop partnerships. Strategic autonomy should not be understood as an EU that stands alone. Together with our partners, we can better promote rules-based cooperation to combat climate change, for example. A natural and close partner for the EU is the United Kingdom. We definitely need a clear and common understanding of the status of the EU-UK relationship after Brexit. In any circumstance, it is nonetheless in our interests to develop a strong and strategic relationship with the UK beyond current issues and disputes.

Lastly, it would be harmful for Europe to divide the world sharply into two economic camps between the United States and China. Europe would fall into a rift between them. With China, we must continue to cooperate economically, and above all on climate policy. However, we certainly must also hold firm and defend our interests better than we have before. It would be in Europe's interest to formulate a principled but balanced policy towards China, and promote that in the transatlantic community. This would ensure both our openness for global rules-based trade, as well as support the development of our strategic autonomy.

The **EIB** enables **strategic investment**, and not just for Europe

WERNER HOYER
President of EIB

At the beginning of 2022, the European Investment Bank formally set up a new development arm: EIB Global. Building on the Bank's long experience of financing projects outside the European Union, the new arm brings together all the resources of the EIB to catalyse development finance, foster strong partnerships within Team Europe, and – above all – to deliver life-changing impacts for people around the globe.

EIB Global has been created in recognition of the fact that the greatest challenges we face today are, indeed, global. There was a time when development was seen as really just a problem for the global South, as something separate from the challenges to be addressed in the North, but such a view is no longer tenable (if it ever was!). Climate change is an example of an inherently global issue. It is clear that it makes no sense to act on it in Europe, in isolation, without working to ensure that a path of sustainable, climate-neutral development is attainable for everyone around the globe. Similarly, the COVID-19 pandemic and it's economic ramifications have rammed home the message that the well-being of all of us ultimately depends on addressing the needs of everyone, whether in terms of health systems, economic opportunities and infrastructure, or the development and spread of new technologies around the globe.

Innovation, the climate transition and development go hand-in-hand. To tackle climate change, massive investment in green technologies is required, both to develop new technologies and to roll them out across businesses, households and infrastructure, across the globe. As the EU Climate Bank, the EIB is actively contributing with its financing to the implementation of the Paris Climate Agreement worldwide. Our experience at the cutting edge of climate finance, funding green innovation and transformation in Europe is a strength that we bring to green development finance outside the EU. And in turn, our global climate activity informs and enriches our work in Europe.

The EU's role as a trailblazer in green transition are important to accelerate the region's own shift to a low carbon pathway. But these efforts are also crucial to enable global green transition. The resources that European innovators devote to the development and deployment of low carbon technologies at home help to de-risk and reduce the cost of critical solutions ahead of their global deployment. Examples of such technologies include green hydrogen, efficient high-capacity batteries for electric mobility and energy systems, the electrification of heat and power in industry, green steel, and sustainable circular models for other resource- and energy-intensive industries. Once these low-carbon energy, transport and industry technologies are technically proven and commercially viable at scale, prospects are also much improved for their accelerated global deployment.

The latter is key to limit global temperature rise to 1.5 degrees Celsius, as we have set ourselves as a target, and it is important to ensure sufficient access to green energy for the EU economy going forward. With demand for green energy expected to increase by a factor of 4-5 in the EU over the coming years, it will be critical that Europe, in addition to investing massively in the role-out of clean technologies at home, builds partnerships which will give it access also to some of the enormous wind and solar potential available outside of its borders.

Just as we are all linked by one global ecosystem, it should be clear that the economies of the world are interdependent, and even that our public health situation can depend on the quality of healthcare available on the other side of the planet: the COVID-19 pandemic has made this all too clear!

Indeed, this pandemic has proven to be far more that a health crisis; it is having far-reaching effects on the economies and societies of countries all around the world. Whether we look at the loss of education or the impacts on businesses, jobs and the flow of finance for development, it is clear that the risks are still significant and that the scars left by the pandemic will take some time to heal.

In advanced economies, we have been able to use fiscal policy at a very large scale to cushion the economic shock caused by the pandemic and prevent widespread job losses and firm failures. This worked by supporting

incomes and thus maintaining consumer demand. It has meant that as restrictions on activity have been lifted, there has been a rapid rebound in consumer activity that has also helped businesses to recover quickly. This is the good news.

But these massive interventions in the national economy have done little to address the supply disruptions caused by COVID-19 and containment measures around the world, disruptions that have been exacerbated by the slow deployment of vaccines in many countries.

The result has been some dramatic disruptions feeding their way along global value chains. These have held back production and the recovery also in developed economies. By one estimate, the cost to the global economy from these supply disruptions could be in the range of one to six trillion dollars, with up to one half of that loss borne by developed economies. While the goal of saving lives and preventing millions from being pushed into poverty should clearly be motivation enough, we can also see that the economic rate of return from fighting the pandemic and investing in the deployment of vaccines worldwide is tremendous.

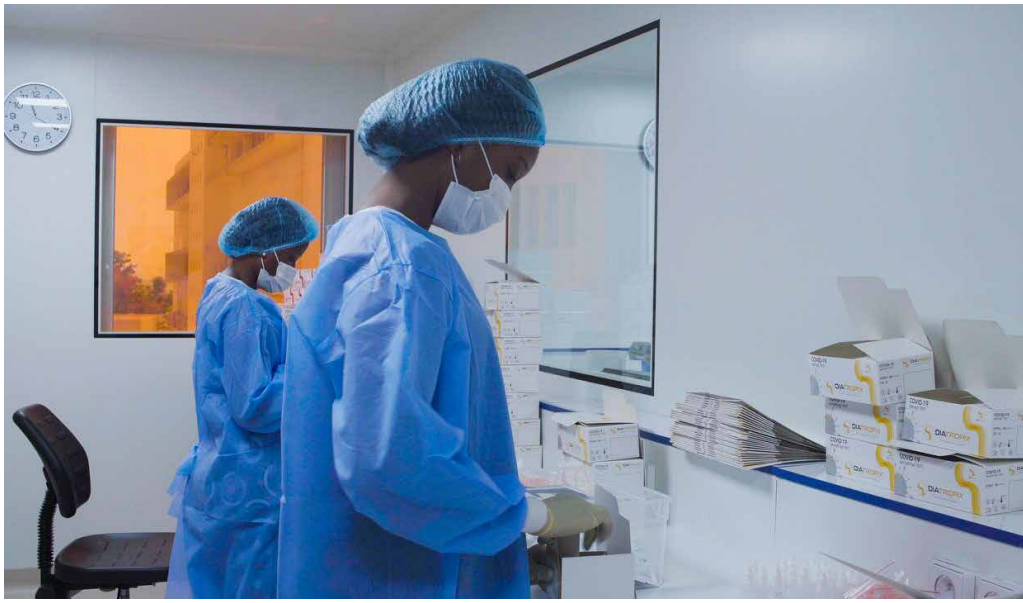
This makes EU backing for development finance more important than ever, with the fight against the spread of COVID-19 an urgent priority. This requires global cooperation and solidarity, particularly on vaccines. The EIB plays an important role in financing biotech research and was a proud backer of BioNTech's work before the pandemic. With the help of the European Commission and the COVAX Facility, we are also supporting the deployment of vaccines against COVID-19 in 92 middle and low-income countries. And we also recognize that fighting this pandemic – and our resilience to future ones – requires investments in health research, healthcare systems and the whole logistic and manufacturing value chain that links them.

We have helped finance the reconstruction of the national Health laboratory in Rwanda, for example, to transform diagnosis, surveillance and research capabilities, while our pharmaceutical investment initiative is helping to scale-up local production of active pharmaceutical ingredients, to strengthen supply chains and reduce import dependency.

Another priority is to actively support microenterprises and small businesses, to help them weather the effects of the pandemic. This is what we have been doing. After the pandemic struck in 2020, we increased our annual lending in support of microenterprises and SMEs outside the EU by 83%, to €4.2 billion, while sustaining our support for investment in vital social and economic infrastructure.

The interconnectedness of the global economy is one reason why the EU has launched the Global Gateway initiative. The partner countries of the EU have major and urgent financing needs to develop their climate, energy, transport and digital infrastructure, and to strengthen their health and education systems. They need a trusted partner to design projects that are sustainable and of high quality, and implemented with high levels of transparency and standards in order to deliver lasting social and economic benefits for local communities,

EIB Global will be a key partner in the implementation of Global Gateways, helping to build sustainable infrastructure with the support, skills and the finance needed to operate it, without creating dependencies, and with the fair and favourable terms needed in order to limit the risk of debt distress. As a stronger platform for partnership and strengthened presence in host countries, our new branch is ready to work with national authorities, other financial institutions and the private sector to scale up infrastructure investment. It will do this to deliver real positive benefits for our partners, boosting our economic links, empowering local communities and tackling today's most pressing global challenges-from climate change and sustainable development to health security, gender equality and education – and it will do so by building on the Bank's decades-long experience in this field.



Strengthening **Europe's Financial Stability**

MARKUS FERBER

MEP (EPP Group – Germany), vice-chair of Parliament's Subcommittee on Tax Matters, Member of the ECON Committee

A European Union that enjoys strategic autonomy needs to have a finical system that supports this autonomy. Therefore, financial stability is essential as it is a vital precondition for economic success in the modern world. After all, the EU can only be a forceful and autonomous international actor if we keep our own house in order. In that sense, a stable and reliable currency is crucial. The Euro has been such a stable and reliable currency over the past years: we have witnessed low inflation rates and fairly stable exchange rates against other major currencies. This has allowed the Euro to become one of the world's reserve currencies. While over the past couple of years, the Single Currency has become an overall success story, the outlook for the future looks somewhat gloomier. Over the past couple of years, public debt ratios in the Eurozone have surged. The economic implications of an unprecedented pandemic and the necessity to launch a forceful fiscal response have worsened an already dire situation. With average public debt levels in the Eurozone reaching 100% of GDP, there might be a risk of another debt crisis.

While debt-servicing costs in the Eurozone are still low and have in fact fallen over the past couple of years, the only reason this is the case, is the European Central Bank's ultra-accommodative monetary policy that has artificially depressed financing costs for many Member States. In light of the current inflationary pressures, it is likely that the ECB's ultra-accommodative monetary policy cannot go on indefinitely. After all, it is not the ECB's mandate to ensure smooth financing conditions for indebted Member States, but to ensure price stability and thereby pave the way for an efficient allocation of scare resources. Therefore, a change in the ECB's monetary policy is not only necessary, but also desirable.

Nonetheless, such a shift in monetary policy might come with side-effects: A U-turn in terms of monetary policy might cause Member States' refinancing costs to rise thus putting a question mark on the long-term sustainability of Member States' public finances. In the medium-term the order of the day therefore has to be to conduct a more responsible fiscal policy.

A key cornerstone of a path towards fiscal responsibility will be the reform of the Stability and Growth Pact (SGP). Looking on the experiences of the past couple of years, one can identify some shortcomings that require adjustments. When it comes to the EU's fiscal rules, there is value in simplicity. Instead of going for a specific rule for every conceivable situation, the SGP needs to focus on a few core principles that are easily understood by everyone involved. Such a streamlined process also implies to refrain from introducing new exemptions (e.g. preferential treatment for sustainable investments).

Currently, the analysis underpinning the SGP relies heavily on metrics that either have to be estimated (such as the output gap or potential GDP growth rate), cannot be entirely influenced by policymakers (such as the annual deficit as a percentage of the GDP) or are prone to frequent revisions (GDP growth). As result, the process often looks more like art than like an exact science.

This causes the decision making to be somewhat opaque and prone to manipulation. Building on the proposals by the European Fiscal Board, we should therefore move towards a system that focusses on variables that are easily observable and under full control by policy makers. Expenditure growth could therefore serve as the central variable. If the expenditure grows slower than a country's gross domestic product, that Member State should gradually grow out of its debts.

One of the key shortcomings of the EU's fiscal framework is poor enforcement. Despite the fact that there were numerous violations of the reference values - sometimes justified, sometimes less so - the European Commission has never proposed meaningful sanctions. An effective enforcement of the fiscal rules requires a capable and impartial referee though. A Commission that considers itself to be first and foremost a political actor, cannot credibly take that role. Therefore, a comprehensive review of the SGP must not stop at the rules itself, but also look at the institutional framework.

For the fiscal rules to be credible, they must be applied in a fair, objective and equal manner to all Member States. During the past years, the European Fiscal Board has built up a considerable expertise and has proven that it can provide fair and independent fiscal analysis. Therefore, the important task of fiscal surveillance should be progressively entrusted to the EFB, which needs complete political independence for that purpose. To ensure political accountability, the final decision in relation to possible sanctions should remain at the level of EU finance ministers.

If the reform proposals outlined above were implemented, this would reverse the trend of steadily increasing public debt levels thus making EU governments less dependent on inflation-prone central bank interventions and the whims of financial markets. This would arguably be of great benefit to the resilience of the European Union and would also increase its strategic autonomy.

STÉPHANE SÉJOURNÉ

MEP (Renew Europe - France)
Chair - Renew Europe Group,
Member of the AIDA Committee

The **EU** to **become** more **resilient** and more **dynamic** to face both internal and **external challenges**

When introducing the French Presidency of the European Council, President Macron described his vision of Europe as the following: "*We must move from a Europe of cooperation within our borders to a powerful Europe in the world, fully sovereign, free to choose and master of its destiny*"[1].

Strategic autonomy provides the European Union with the ability to make its own decisions. Strategic autonomy is not only an important step for the survival of our European decision-making, but it will actually create an undeniable position on a global platform.

Without strategic autonomy, the destiny of the European Union will be in the hands of foreign powers who do not share the same values as we do. Think of the Chinese Communist Party, which has turned China into the most advance repressive state the world has ever known. Take Russia, which is using its gas supply to play the Member States of the EU against each other.

Fortunately, we do not have to deal with Trump anymore, but it is not unthinkable that he or a similar leader would lead the biggest economy of the world again. And last but not least the Turkish leader Erdogan, who is misusing migrants as pawns in his sinister strategy to increase his power base.

To make a fist on the world stage the EU must first reinvent itself, to become more resilient and more dynamic to face both internal and external challenges.

1 https://www.lemonde.fr/politique/article/2021/12/09/presidence-francaise-de-l-ue-emmanuel-macron-souhaite-une-europe-puissante-dans-le-monde-pleinement-souveraine_6105392_823448.html

Internal challenges

Like the rest of the world, including all the major economies, Europe was heavily affected by the outbreak of the covid-19 crisis and ensuing economic slump. Within just a few weeks from the sudden appearance of the virus in Europe, our economy was shedding millions of jobs, whole sectors witnessed unprecedented contraction, global supply chains were under immense pressure and an insecurity almost unknown to our generation had set it. But above all, the cost in human lives was certain to be high.

Taken together, all these simultaneous pressures on our healthcare systems, economy and the way of life in a market economy illustrated our vulnerabilities when it comes to global supply chains and, at the same time, our inextricable ties to our major economic partners. Europe's **open strategic autonomy** (OSA) must be understood in this highly dynamic and complex context of global trade flows, resource dependency and ongoing environmental and health crises.

The Covid-19 crisis made it abundantly clear that we must work hard and move from the current state of vulnerability and dependency to a future state of enhanced resilience. Our future prosperity and competitiveness depend on the strategic decisions taken today: Open Strategic Autonomy provides the framework we need to work under with these goals in mind.

The very goals of the **European Green Deal** (EGD), which was initiated before Covid-19 struck, laid foundations for policies which contribute to our open strategic autonomy. The twin green and digital transition, which lie at the heart of the EGD, aim to ensure that Europe has a relative autonomy based on domestic renewable energy sources and efficient, circular use of our scarce natural resources. In that sense, the work towards reaching an OSA has already began and is in line with our overarching policy goals.

What are the major issues related to our strengths and vulnerabilities that we must address head on? Obviously, we must build on the assets that we already have: we must strengthen the resilience of our strategic economic assets and industries, from intellectual property rights to critical infrastructure. Robotics is an economic sector where we outperform our competitors: we produce "more than a quarter of the world's industrial and professional service robots (e.g. for precision farming, security, health, logistics)[2]."

Moreover, Europe is a world leader in offshore wind, electric vehicles and green hydrogen technology. Our efforts should be directed at unleashing the immense creative potential of the private sector and exploiting synergies between all relevant EU and national policies to ensure that we maintain and expand our edge in these technologies and are in the position to reach our ambitious 2030 and 2050 climate targets.

2 Source: The JRC study on OSA

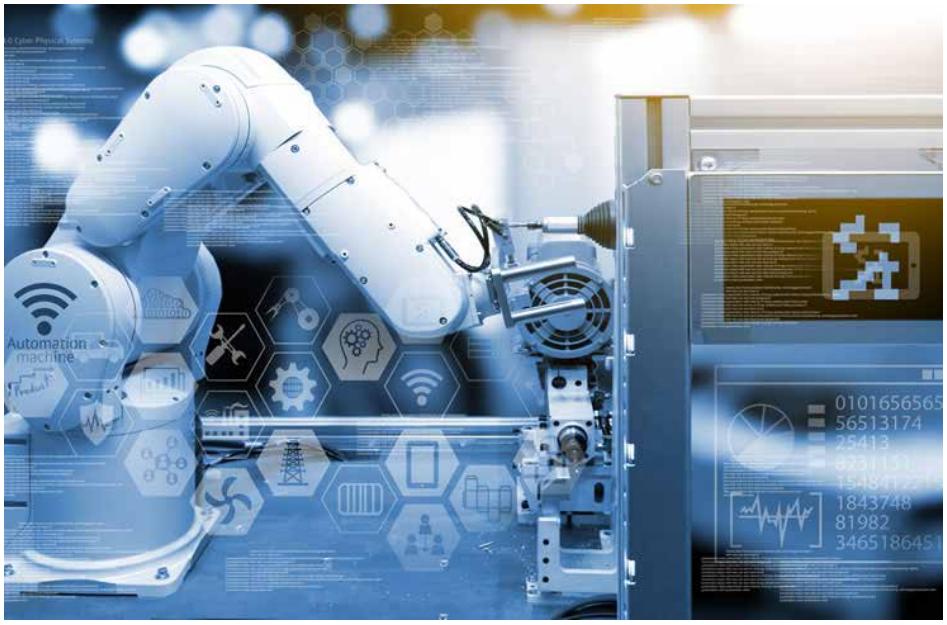
The EU's OSA will benefit from the green transition. The transition toward a renewables-based economy will reduce drastically our staggeringly high import dependency on fossil fuels, while the effective implementation of a circular economy will help us reduce the need to import critical raw materials. Europe's industry is based on an older-generation infrastructure and as such is more carbon intensive than our Asian competitors are.

However, Europe has an advanced R&I roadmap to decarbonise which must be implemented effectively. Europe's energy-intensive industries could be at risk of unfair competition from third countries, by implementing stricter environmental standards; this is why it is of paramount importance to establish and effective and World Trade Organisation (WTO)-compliant carbon border adjustment mechanism.

The key to our success in creating a more resilient society and economy lies in long-term, committed investments in **R&I** on the one hand and innovation deployment on the other. The very first precondition is that we reach our target of investments in R&I of 3% GDP. Furthermore, we need to focus our efforts also on **digital industries**, which already permeate our lives and economy and will do even more so in the future.

We should use all existing funds and opportunities to support research in software and hardware start-ups and deep tech and green tech start-ups. We should also look beyond the current framework and create a **Sovereign EU Tech Fund** already argued for by the leaders of 32 EU 'unicorns' - start-ups worth over $1 billion - in order to boost our efforts in this field. We must create conditions for disruptive innovation that will enhance the twin green and digital transitions and thereby strengthen our OSA.

Europe has substantial capabilities in R&I, but the deployment of research outputs into



the economy and industry must be enhanced if we are to increase our competitiveness. We must make greater use of **Common Industrial Technology Roadmaps**, which should link EU and national support prog rammes and create synergies between R&I centres and industry and thereby strengthen EU industrial ecosystem.

External challenges

On a daily basis, we are confronted with the United States, Russia and China practicing geopolitics on the highest levels. It is time that we give the European Union the tools to stand up as a strong sovereign party supporting and defending our values, our interests and our democracy. Europe will only be able to claim its role on the global stage when it has achieved its full autonomy to decide and act in specific fields.

When Putin invites European politicians to Crimea and Moscow, when China formed its 17+1 initiative[3], these global powers not only exposed Europe's greatest weakness, they also showed their greatest fear; Europe's strength lies in its unity. When Europe acts as one, it is a global super power to be reckoned with. When Europe is divided, it turns into itself and will be ignored.

Strategic autonomy on key elements could provide the Union with the toolbox to act as one and truly and independently engage in constructive dialogues with the other geo-political dialogues as well as with any of our partners. This autonomy should be acquired in order to strengthen the EU's tools in its foreign affairs toolbox. There are a few clear examples where we can strengthen our position in the world.

In parallel, the EU need to move forward and form a real Defence Union, which would form the European pillar within NATO and further improve the coordination of the military structure and activities of the Member States. Finally, the EU needs to reduce existing dependencies on fossil fuel and become more self-sufficient. When we no longer have to balance our gas market with our values, we will be free to not compromise on what we believe in.

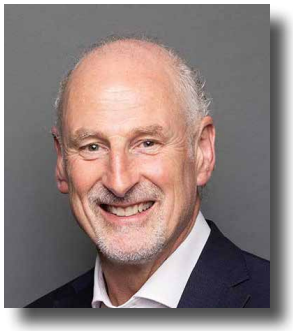
Conclusion

Autonomy is often falsely interpreted as something negative. "*autonomy is not protectionism. Quite the opposite*!"[4] explained Charles Michel in his 2020 lecture to the Bruegel Institute. To understand this is key to understanding the role of a stronger EU within and outside of its own borders. Autonomy is about making our own decisions, making our own alliances and working together with our partners to stand up for our values, our convictions and our way of live.

The wish for a more autonomous Europe has been around for a long time. Today, we are confronted with a world in which we either grant this autonomy or risk becoming superfluous.

3 A cooperation between China and Central and Eastern European Countries

4 https://www.consilium.europa.eu/en/press/press-releases/2020/09/28/l-autonomie-strategique-europeenne-est-l-objectif-de-notre-generation-discours-du-president-charles-michel-au-groupe-de-reflexion-bruegel/



Going the Extra Mile to Turn Science into Reality for **Patients in Europe**

BRENDAN O'CALLAGHAN

Executive Vice President, Global Industrial Affairs, Sanofi

The pandemic proved that necessity truly is the mother of invention and furthermore demonstrated the critical need to ensure a resilient and robust European Health Union.

Europe is reliant on ensuring it has in place a globally competitive research and industrial ecosystem if it is to realize its strategic autonomy in health. Delivering on this ambition, requires bold measures that support accelerated scientific and medical innovation, as well as the ability to rapidly scale-up manufacturing and supply of medicines across the pharmaceutical value chain, while establishing leadership in critical areas, such as innovative biologics-based production capacity.

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1. Equipping Europe with a bold European research, innovation and industrial strategy for health

The US BARDA (Biomedical Advanced Research and Development Authority) set up 15 years ago allowed the pharmaceutical industry to gather unique expertise and knowledge through the various projects initiated and funded by the agency. The creation of the EU's HERA – *Health Emergency preparedness and Response Authority* is a clear illustration, building on a strong political willingness to make a similar concept a reality in Europe. Its work programme rightly reflects that close partnerships are needed to ensure that research, development, manufacturing, and supply chains are directed to the strategic objectives of the EU and its member states in normal times, but capable of being rapidly ramped up as soon as a crisis arrives. With its comprehensive mandate and associated budget recently approved of 6-billion-euro to accompany these missions over a six-year period coming from various EU programmes (such as Horizon Europe, EU4Health), this sends a strong signal on the need to respond collectively, through public and private partnerships, to anticipate and address future health threats. The setting up of new industrial partnerships and the creation of a Joint Industrial Cooperation Forum are other welcome elements, which need to be complemented with pragmatic and results-oriented ways of working.

While HERA's structure is promising, 2022 will be pivotal for operationalizing the authority's mandate setting up a clear governance and implementing the different streams - such as ever-warm facilities for vaccines and therapeutics production, advanced R&D and the provision of medical counter measures.

Likewise, the ongoing discussions on *Important Projects of Common European Interest* (IPCEI) represent a promising path forward to allow for greater collaboration, teaming up so we can act today to address tomorrow's challenges in health.

This approach ensures an integrated vision for the health industry sector with upstream, downstream and end-to-end supply chain capacities being established to respond to a rapidly growing demand in healthcare. An analysis of strategic dependencies and of available capacities in Europe, is in this respect essential, but needs to then be followed by the right policy framework to foster both innovation as well as production and sharing investments from public and private partners to create strong R&D and manufacturing capabilities for the future.

We're pleased to see the Manifesto Towards a Health IPCEI launched by the French Presidency to the EU signed by sixteen member states, marking strong support of an IPCEI for health.

2. Bringing transformative therapies to patients

With a strong R&D presence, investments creating new partnerships in research and almost 40 production sites across Europe, we at Sanofi are a major part of Europe's pharmaceutical value chain. We're building on a world-class pipeline which is accompanied by a transformed and modernized industrial network. We're not only building the capacity to deliver our science of tomorrow but we're also playing our part to respond to societal concerns such as equipping our systems to be prepared to respond to future health threats.

We have made significant investments in France to increase our capacity for vaccines research and production and contribute to future pandemic risks. We're creating an Evolutive Vaccines Facilities (EVF), as a new production site concept and a research center in France which will be dedicated to vaccines.

EVF is a new type of factory designed around a central unit, housing several fully digital production modules that make it possible to produce three to four vaccines simultaneously and based on different technologic platforms (including classical Biologics approaches, or mRNA), versus only one in current industrial sites. This modularity will make it possible to prioritize the production of a specific vaccine in a timely manner based on public health issues.

This contributes to Europe's growth and technological competitiveness and will support the region's future autonomy in health. The ambition to build European-owned strategic autonomy, to become more resilient in facing healthcare, economic and technological challenges is essential, especially in our times of recovery.

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3. Transforming our industrial network to embrace the digital and green transition

Looking at our own journey of digital transformation, we are realizing a twin goal. We're of course looking at accelerating our performance and efficiency in our industrial network but doing so is also the key enabler to serve a collective agenda with our goal to be carbon neutral by 2030 and to have net-zero carbon emissions by 2050.

In this context, we're continuing to execute a significant investment plan to digitalize our factories, across 15 sites in Europe which represents more than 300M€ in five years to improve all aspects of manufacturing and supply operations ranging from yield, productivity, quality, flows and including direct connectivity with both suppliers and customers alike, to build a true value stream, across the entire pharmaceutical eco-system. Our ambitions, furthermore, includes our sites' comprehensive plan to improve their footprint and impact on levels of energy, water and waste.

For example, our manufacturing site in Sisteron (France) is a clear illustration of our commitment to build such a sustainable future. We created a fully automated and digitalized chemistry unit to accelerate the launch of new, specialized small chemical molecules for potentially life-changing oncology and specialty medicines. This unit is also an integral part of our ambition to reduce our environmental footprint and shift towards green pharmaceutical chemistry, through improved waste management and air recycling allowing 40% reduction of the site's electricity's consumption.

Another compelling example is the development of a launch unit for the industrialization of small molecules in the field of rare, autoimmune and oncology in Scoppito (Italy). In this world center of excellence, we use the most advanced digital technologies and apply energy consumption targets aimed at zero emissions.

We are and will continue to play our part on the transition to a healthy planet, but we must continue to work hand in hand with our public counterparts. To build on the momentum, there is a need to develop common regulations on environmental footprint to accompany the green transition, maintaining market attractiveness for instance through sustainable procurement models including relevant criteria for pharmaceuticals, or vaccines produced with high environmental standards. And we also need to reflect on this green transition in the IPCEI in health by incorporating innovative bioproduction, greening production technologies and processes into its scope.

I believe Europe can make a difference and has the means to take a leading global role in this important policy area for the future autonomy of the Union.

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Europe also has everything it takes to become a world-class life science hub. We saw that the first initiatives taken to respond to the pandemic go in the right direction. But we need to think beyond that.

Benchmarking ourselves with other sectors is always inspiring. The European Chips Act is worth looking at as it recently proposed a compelling case of a bold and comprehensive approach. It combines a mix of public funding for research, industrial innovation, industrial production capacity and supply chain-focused actions, with the specific regulation and international partnerships. The recipe for success is there with clear short and mid-term roadmap and well-defined KPIs shared across the EU and its member states. We hope other key sectors, including health, can be looked at through a similar lens.

PIERRE DELSAUX

Director General to the European Health Emergency Preparedness and Response Authority (DG HERA), European Commission

Strengthening Europe's capacity to **anticipate** and respond **rapidly** to cross-border **health emergencies**

In the past 10 years, the world has witnessed some of the deadliest outbreaks of infectious diseases in modern times, including Influenza, Ebola and the Zika epidemics. Despite current knowledge, nations across the globe were under-prepared when COVID-19 struck and brought the world to a near halt in 2020.

COVID-19 will not be the world's last public health emergency and some important lessons have already been drawn. Europe needs to be better prepared for future pandemics and other major health threats.

At the same time, the EU's response to the evolving pandemic has included a wide range of unprecedented initiatives that were designed and delivered in record time. This, above all, saved lives, livelihoods and brought help to health services. The pandemic demonstrated the need and added-value for coordinated EU level action to respond to health emergencies. It also revealed gaps in threat assessment, preparedness and response capacities.

In November 2020, the European Commission tabled a proposal for a reinforced European Health Union, including strengthen mandates for both ECDC[1] and EMA[2], the two agencies that had been at the forefront of the EU's response, as well as a new regulation on cross-border health threats.

But there were still key gaps to be addressed for the EU to be adequately prepared for the next health emergency. In particular, COVID-19 demonstrated the vulnerabilities that exist regarding the development, manufacturing, procurement and equitable distribution of medical countermeasures[3] in the EU and globally.

This is why the Commission announced on 16 September 2021 the establishment of HERA, the European Health Emergency preparedness and Response Authority. This new service of the Commission is aimed as a common tool for the EU Member States, ensuring coordination among national initiatives. Action at EU level will allow mobilising critical mass investments while avoiding unnecessary duplications.

The core mission of HERA are:

- strengthening EU health security coordination during preparedness and crisis response times, bringing together the EU Member States, industry and relevant stakeholders in a common effort;
- addressing EU vulnerabilities and strategic dependencies related to the development, production, procurement, stockpiling and distribution of medical countermeasures;
- reinforcing international cooperation and the global emergency response architecture.

1 European Centre for Disease Prevention and Control https://www.ecdc.europa.eu/

2 European Medicines Agency https://www.ema.europa.eu/

3 Medical countermeasures are products that can be used to diagnose, prevent, protect from or treat conditions associated with any kind of serious cross-border health threat. Examples are vaccines, antibiotics, medical equipment, chemical antidotes, therapeutics, diagnostic tests or personal protective equipment such as gloves and masks.

HERA have different modes of operation during preparedness and crisis times. In the "preparedness phase", it steers investments in strengthening prevention, preparedness and readiness for new public health emergencies by ensuring access to relevant medical countermeasures in case of need.

In the "crisis phase", HERA will have stronger powers for swift decision-making and implementation of emergency measures. For that purpose, the establishment of HERA was accompanied by a proposal for a Council Regulation allowing for the activation of urgent and targeted medical countermeasures during public health emergencies in the EU. These measures include the procurement and purchase of crisis-relevant medical countermeasures and raw materials, the activation of reserved industrial facilities for flexible manufacturing of vaccines and therapeutics, the establishment of a Health Crisis Board for rapid decision-making and the creation of monitoring mechanisms. An agreement was found in Council at the end of December but its formal adoption is pending the finalisation of the Cross-Border Health Threats Regulation that is still under negotiation between the European Parliament and the Council, as part of the co-decision process. In this emergency phase, HERA will make sure key medical countermeasures are deployed rapidly and effectively. These include purchasing the right medical equipment and getting the right medicines to the right areas as quickly as possible - similar measures that were enacted during the COVID-19 pandemic on an ad-hoc basis

HERA's mandate is to strengthen EU health security coordination, to face up to future health threats to our Union and as effectively and quickly as possible, in a common effort to prevent health crises and to swiftly and effectively respond to emerging or full-blown

crises when, and if, they do arise. In practical terms, HERA will strengthen preparedness by first identifying and making sound investments in the development, manufacturing and stockpiling of medicines, as well as in the training of national experts, in order to face new public health emergencies with confidence.

HERA will also work closely with international partners to benefit for international efforts and create synergies with scientific and industrial powers, but as well to strengthen preparedness and response at global level, making sure that countries around the world are capable of producing vaccines, medicines and medical supplies in times of need. As we all know too well now, a health emergencies that affects one part of the world can rapidly affects us all. Contacts are already taking place with the World Health Organization and in particular with the Hub for Pandemic and Epidemic Intelligence, recently established in Berlin. Cooperation schemes are being put in place as well with BARDA, the US model of HERA as well as with other equivalent agencies. In addition, besides the sharing of vaccines produced in Europe, HERA with the other services of the Commission and the relevant EU agencies, is supporting African partners for the development of local capacities for the detection and identification of threats, the monitoring of epidemics and the development of production capabilities in Africa.

The EU's supportive role in **managing public health crises** and **cross-border threats**

SARA CERDAS

MEP (S&D Group-Spain), Vice-Chair of special Committee on Beating Cancer, Member of the ENVI Committee

As the COVID-19 pandemic unfolded, the European Union (EU), its Member States and institutions swiftly managed to work together and find solutions where many only saw problems.

It is essential to remember what we went through in the first months of 2020: we saw borders closing without clear coordination, in an almost panic move due to the unknown virus and its potential impact. At the same time, a worldwide search for personal protective equipment and other medical products was in order and a joint procurement was launched by the EU. Solidarity also prevailed when different Member States were hit differently and in need of specialized medical professionals, equipment and medical products. When focusing on the vaccination rollout, seen as one of the most promising tools to tackle COVID-19, the EU was since the beginning committed to ensuring universal access to a safe and effective vaccine solution. And so the EU delivered.

With many lessons learned, especially when focusing on managing future public health crises and cross-border threats, it is imperative that we foresee the obstacles ahead and reinforce the importance of building strong health policies, as an investment for the whole of society.

The Group of the Progressive Alliance of Socialists and Democrats (S&D) in the European Parliament has been asking for a true European Health Union, and the approved EU4Health program will have an unparalleled role, by investing 5,3 billion euros in 10 specific objectives under 4 general goals: "to improve and foster health in the Union"; "to tackle cross-border health threats"; "to improve medicinal products, medical devices and crisis-relevant products"; and "to strengthen health systems, their resilience and resource efficiency".

Besides that, a new legislative package to strengthen the EU's response to health threats, with the umbrella file of the revision of the regulation of serious cross-border health threats, the revision of the mandate of the European Medicines Agency (EMA) and the revision of the mandate of the European Centre for Disease Prevention and Control (ECDC) will respond to EU needs. The aim is to build a stronger and more comprehensive legal framework within which the Union can prevent, prepare and respond to health crises, as this won't surely be the last pandemic of our times.

The strengthening of the role of EMA will allow this agency to contribute more in the health crisis management framework: to deal with potential drug shortages during major public health events and emergencies, and strengthening the ability to manage the availability of medicines and medical devices.

On the other hand, the strengthened mandate of the ECDC will ensure better preparedness to manage present and future health challenges with reinforced: epidemiological real-time surveillance; preparedness and response planning, reporting and auditing; provision of non-binding recommendations and options for risk management; capacity to mobilize and deploy an EU Health Task Force to assist local response in the Member States; network of EU reference laboratories and a network for substances of human origin.

To strengthen Europe's ability to prevent, detect, and rapidly respond to cross-border health emergencies, the European Commission also presented the EU Health Emergency Preparedness and Response Authority (HERA). HERA will benefit from the administrative support of DG SANTE, ensuring the development, manufacturing, procurement, and equitable distribution of key medical countermeasures.

With regard to the regulation on serious cross-border health threats, that is being negotiated at this moment, the European Parliament has been keen in promoting health literacy and increasing transparency throughout all processes, focusing on prevention, preparedness and response in relation to European and national plans and maintaining the goal of better respond to any health threat that may affect the EU.

The EU will also review its pharmaceutical strategy, which aims to modernize the regulatory framework, support research and promote a competitive and innovative European pharmaceutical industry, trying to fulfil unmet medical needs and enhancing resilience through diversified supply chains, environmental sustainability, and crisis preparedness.

When we think at a larger scale, it is clear that there is an urge to work on an International pandemic treaty on the fight against pandemics. Cooperation is needed to better prepare the World for the next big public health crises, at all levels - prevention, preparedness and response -, as approved by the World Health Assembly last December. This treaty must be drawn into the International Health regulations, that will also be revised, and are already legally-binding on 196 countries, thus creating a framework that embodies the lessons learned from the COVID-19 pandemic.

When we think about Europe's strategic autonomy in this area, even if it seems paradoxical, it will mean not only the strengthening of national prevention, preparedness and response plans, but also the deepening of the Union's capacities and its global cooperation. In public health, as we have heard during the last months, "no one is safe until everyone is safe" - and that is why our main political ambition must be to continue doing what has never been done before to guarantee that Health is an universal right.

Ensuring a robust and **safe supply chain** for **pharmaceuticals** in **Europe**

NATHALIE COLIN-OESTERLÉ

MEP (EPP Group -France), Vice-Chair of Special Committee on Beating Cancer Member of the ENVI Committee

Until March 2020 and the emergence of the COVID-19 pandemic in Europe, the concepts of 'sovereignty' and 'strategic autonomy', used at European level, often referred to a French specificity developed during the Cold War with the aim of independence from the two blocs.

Now, and it must be welcome, these concepts finally go beyond French borders and international relations stricto sensu. Unable to produce sufficient surgical masks, to equip hospitals with ventilators, or to treat adequately some patients due to a lack of medicines, Member States have understood that the concept of 'strategic autonomy' applies to all of them, and should be extended to the health sector.

The difficulty? Defining health as a strategic area to ensure a robust pharmaceutical supply chain in Europe has three concrete implications, which are in strong opposition to some European dogma:

1. Competition rules must be put into question when the most vital interests of States — such as the health of their population — are at stake;
2. The European Union must become a political power capable of proposing levers to respond to the challenges and threats to its vital interests;
3. Member States must be able to set aside their own competences when it comes to improving cooperation to defend these vital interests.

Let us not be naive, in strategic sectors, the other powers of the world — Russia, China, the United States — do not focus on the principles of free competition. State aids support innovation and research, private companies and the development of their supply chains.

At European level, the same must be done: if it is a matter of protecting the pharmaceutical industry or encouraging a company to set up or maintain its business in Europe, Member States should be allowed to intervene by means of fiscal or financial incentives. In particular, the COVID-19 pandemic has demonstrated that security of supply must be a priority criterion as prices in attribution of tenders. It should be a key criterion in order to better diversify sources of supply, and thus reduce the dependence of certain products on certain industries and/or geographical areas.

The launch of Important Projects of Common European Interest (IPCEI) is a step in the right direction. Since, January 1st 2022 it allows Member States to circumvent State aid rules in order to address market failures.

The European Union must also assert itself as a political power capable of offering structural solutions to Member States when its strategic interests are at stake.

Two of them appear to be fundamental: the stockpiling of medicinal products and medical devices of public health and strategic interest as wells as the creation of non-profit pharmaceutical establishments of general interest.

As regards strategic stocks, the European Commission announced their creation in March 2020. Once fully operational, they will have to cope with possible tensions on supply chains. In parallel, some old medicines are no longer produced, because they are not profitable enough even though they remain essential for public health. The establishment of pharmaceutical establishments should be considered to produce such medicinal products of strategic and health interest and to ensure their security of supply in any event and at all costs.

The Commission will present its "Market Emergency Instrument" next March. Let us hope that this new regulation will be ambitious, and will respond efficiently and rapidly to existing disruptions in supply chains and possible future shortages.

These two measures will not be able to achieve their objectives without further cooperation between Member States and European integration in health matters.

The joint procurement of COVID-19 vaccines is a resounding success demonstrating the added value of European cooperation. There are now more citizens vaccinated in Europe than anywhere else in the world.

Even better, Europe has become a true vaccine factory, becoming the world's largest exporter, able to send half of its production abroad, *a sine qua non* condition for ending the pandemic.

Finally, while more cooperation between Member States is needed, there is also a need to strengthen public-private partnerships. Increasing European research capacities is crucial: let us believe in the innovative power of the Old Continent!

Thus, ensuring a robust and safe supply chain for pharmaceuticals in Europe requires broadening the concept of strategic autonomy to the health sector. This enlargement has implications which some will consider to be totally opposed to the fundamental principles of the functioning of the European Union. I call on them not to be afraid to break taboos in order to grant citizens better performing health systems, better equipped to withstand competitive pressures, and better able to anticipate and respond to possible future health threats!

Pharmaceutical sector - how to truly achieve strategic resilience

CRISTIAN-SILVIU BUSOÏ

MEP (EPP Group – Romania), Chair of the ITRE Committee

A strong Union needs a strong industrial sector to promote competitiveness, create jobs and guarantee a high quality of life. And the EU must support the development of sectors that are of strategic importance for Europe's industrial future, the pharmaceutical sector being one.

In my view, the research & development pharmaceutical industry is an indispensable and critically important industry that the European Union must not do without. The industry in Europe is uniquely placed to play a key role in our economic recovery, our resilience and future growth, but only if the drivers of innovation are in place, and if the appropriate financial support will be accompanying the upcoming legislative frameworks.

COVID-19 crisis has clearly proven European Union's need for well-defined and adequately-financed policy instruments, and this is what I envisage also for the upcoming pharma package review. But COVID-19 has revealed also shortages in the supply of equipment in hospitals, has deepen medicines shortage and has revealed the need to reduce the EU's external dependencies also in the pharma sector.

Moreover, the pandemic has highlighted the need for boosting innovation and investing more in health in general.

The pharmaceutical industry employs 830,000 people in Europe, and directly contributes to more 100 billion euros to the EU economy. Sustaining and growing pharmaceutical investment in Europe depends on creating a policy framework that supports the evolution of the region's innovation and manufacturing ecosystem and an industrial strategy that ensures Europe remains competitive. in the face of intense competition from other regions.

It's a long-term decision as to where innovation will occur. Will this take place in the Union or outside? And where innovation happens matters. It matters for jobs, resilience and economic growth and last but not least to patients, to health systems in Member States and across the EU. Innovation is not an abstract concept, it means new diagnostics, treatments and vaccines that can transform the lives of patients and protect whole populations.

The EU now has an opportunity to answer to these global challenges but for that, a holistic EU approach is needed for the EU's pharmaceutical, industrial and trade strategies in coherence with other EU initiatives, like the Intellectual Property Action Plan.

These EU strategies are opportunities to drive Europe's Health and Growth. They are necessary to compete with other regions in the future in the development of new medical technologies and bringing innovation to EU patients and health systems.

For the research-based industry in Europe that means; an intellectual property framework that protects investment in medical research in the EU and globally, a research infrastructure that helps deliver the next generation of health innovation, a regulatory framework that is stable, fast, effective and globally competitive and faster, more equitable access to innovative treatments for patients across Europe.

We have successes to build on: over the last decades, we have seen the pharmaceutical industry respond to the incentives put in place at EU level, and this precedent should be the basis of how we ensure the industry continues to direct research and innovation in the areas we, as societies, need most. Particularly the EU legislation on medicines for rare diseases and paediatric medicines has been a success story which we should be proud of as Europeans and look to build on.

As we have seen during the COVID-19 Pandemic, when there are vital issues facing our populations, we need vital EU industries to be able to respond effectively. We should focus on how to make sure the Union continues to play a leading role in vital industries, so as to truly achieve strategic resilience. This includes setting an EU research agenda and the prioritisation of R&D in areas of societal interest to the EU, be it anti-microbial resistance (AMR), neurodegenerative disease or rare and paediatric conditions to name a few.

Sustaining and developing pharmaceutical investment in Europe is contingent on creating a policy framework that supports the evolution of the region's innovation and manufacturing ecosystem and an industrial strategy that ensures Europe remains competitive in the face of intense competition from other regions. The COVID-19 crisis has underlined the inextricable link between our health and our economic prosperity.

In my view we should focus, in terms of policies on: strengthen global supply chains and keep them open; reduce import dependencies by diversifying sources of supply, and create incentives for R&D and production in the Union in order to reduce dependencies on long-term.

These policies will increase the EU's agility, competitiveness and pandemic preparedness and help the EU to maintain its attractiveness as a global trade hub. The new EU 'Open, sustainable and assertive trade strategy', revised EU industrial policy and EU pharmaceutical strategy have the opportunity to all contribute to these goal.

We must all work together to ensure that Europe remains a world leader in pharmaceutical innovation for the benefit of European citizens. We have a once in a generation chance to future-proof and streamline the pharmaceutical regulatory environment. For that we need all stakeholders around the table and put forward proposals based on data and facts.

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MARKUS KALLIOLA

Project Director, TEHDAS Coordinator, The Finnish Innovation Fund Sitra

European Union needs reliable and **secure access to health data** to build **strategic autonomy**

When planning strategic autonomy in health, policymakers face a problem known in behavioural science as hyperbolic discounting. This means that just as objects far away seem smaller, so do things far into our future. As a result, we are inclined to choose immediate rewards over long-term ones even when they are far more modest. With health this is tangible in the aftermath of the Covid-19 pandemic. We have tended to give greater priority to things that have helped us deal with the pandemic, rather than things that would yield the most health benefits in the long run.

Within the first hundred days, the current European Commission published its data strategy, which highlighted health sector and health data. Even in the midst of pandemic the German presidency of the EU Council strongly committed to building the European health data space in the Council conclusions (2020). The European Parliament also urged the faster development of the European health data space in its response to the data strategy (2021). But when the time comes to make decisions, have the life-saving actions the EU and the member states have taken during the pandemic worn us out? Or are we ready to strengthen Europe as planned?

The elephant in the room is the interpretation of the Lisbon Treaty. TFEU 168(5) allows the EU Council and the European Parliament to take measures to protect and improve human health, excluding any harmonisation of the laws and regulations of the member states. Initiatives that come close to that face a hesitant first reaction from European capitals. Some important papers have recently dealt with this topic. In her policy contribution Anne Bucher (2022) highlights the importance of the European Health Data Space and especially the part of it that deals with health research, regulation and policymaking. Henrique Martins (2021) has contributed a study to European Parliamentary Research Services in which he echoes the same view and among other things proposes a reinforced role for the ECDC in non-communicable diseases and a common health data strategy for the EU. Interestingly, these interventions do not see the current treaties as showstoppers when it comes to deepening the EU co-operation in health.

Europe's Beating Cancer Plan with its 4-billion euro budget is ambitious. But even such a bold flagship initiative may be in danger of not getting off the ground if health data related to cancer cannot be efficiently used. The plan states that the health sector is data-rich but information poor and it calls for the European Health Data Space to bring interoperability and sharing across EU borders. It could be said that the fight against cancer is further complicated by 27 different legal interpretations of the GDPR in health data sharing. Understanding that regulating health data is not only a matter of public health (TFEU168(5)), but also a question of internal market (TFEU114) could be the push we need to harmonise practices.

For me, strategic autonomy in health and bringing health benefits to EU citizens boils down to making the EU the best location to do research and innovation. It means that the brightest minds stay here or relocate from elsewhere because of the opportunities we offer. Innovative start-ups and established pharmaceutical companies should also find the EU the place to do business and hire a skilled workforce. And it all starts with data. We need to create a foundation for future generations to work seamlessly throughout Europe. A joint action Towards the European Health Data Space, of which I am a coordinator, is working to meet this goal and provide recommendations for the European Commission and the member states to build an ambitious European Health Data Space.

The legal proposal for the European Health Data Space is due in the coming months. Although European Institutions seem to share the same goal, there is a final hurdle. We often spend the most time on the decisions that matter least. With health data there are many details that the Council of the EU and the European Parliament could debate for years. My hope is that each party keeps their eye on the ball and together scores one for Europe.

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Martins, H. (2021) 'EU Health data centre and a common data strategy for public health' Panel for the Future of Science and Technology (STOA), European Parliament.

Council conclusions on COVID-19 lessons learned in health 2020/C 450/01

Report on a European strategy for data (2020/2217(INI))

Beating cancer plan (2021) https://ec.europa.eu/commission/presscorner/detail/en/IP_21_342

For a **pharmaceutical strategy** promoting **health security**

DOLORS MONTSERRAT

MEP (EPP Group, Spain), Member of the ENVI Committee, European Parliament

The pandemic has put Europe in the mirror, and forced us to reorganise our priorities. We have learned from our mistakes, and we now know what we need to work on for the future, what aspects of the Union we need to strengthen, defend and safeguard, and, above all, we have learned that we need to strengthen the European health security.

Without health, there is no well-being, no work, and no social life. If we have the best quality of life in the European Union, it is also thanks to our excellent health systems. This pandemic has opened our eyes and made us appreciate this much more, while making us more ambitious.

Europe is leading the fight against climate change and caring for the planet, and now, after COVID-19, we have the opportunity to make Europe and its universally accessible national public health systems world leaders in the health sector.

The fight against COVID-19 has shown us that, with will and leadership, we can achieve in one year what used to take a generation. In 2021 we put in place the first pillars for building the European Union of Health: the COVID-19 vaccination strategy, the reinforcement of the European Centre for Disease Control (ECDC) and the European Medicines Agency (EMA), the creation of the Health Emergency Response Authority (HERA) and its incubator, the new autonomous UE4Health programme and the EU Beating Cancer Plan which, together with the New Pharmaceutical Strategy for Europe, launch the decade of health and research in Europe, thus strengthening not only the economic but also the social dimension of the European Union.

It has been 20 years since the last Pharmaceutical Strategy was launched, and since

then it has changed dramatically. We face challenges that were unthinkable at the beginning of this century. We have been hit by severe crises, but science and technology have been two huge social shields.

We have learned that in complex situations we need more science and technology and more collaboration between public and private entities. This is the only way to achieve the best research and treatment development in the world, contributing to ensure our health security.

European patients will be able to benefit from scientific advances and digital transformation, which are essential for cutting-edge healthcare. Gene and cell therapies, personalised medicine, nanotechnologies and nanomedicines, next generation vaccines, as well as e-health through supercomputing, artificial intelligence and an interoperable structure for the European Health Data Space with the "Over a Million Genomes" initiative will bring huge benefits for research, prevention, early diagnosis and post-treatment of all diseases.

All these advances must reach all our citizens, as there is no innovation without universal access to its benefits or without the sustainability of the health system. We all have the right to equal access to the best treatments. There is no room for 27 different Europe.

The EU must not allow it to take 9 days to receive a special drug in some states and 1,000 days in others. We have 7000 rare diseases with no cure, and 30 million people without an answer. We also face threats of unaddressed pandemics, such as antimicrobial resistance, which represents a serious global health problem and a serious risk to the well-being of European citizens that will

pose a major challenge to European health systems and societies.

In the last 20 years, the shortage of medicines has increased twenty-fold. Many factors contribute to these shortages, including the high dependence on non-EU countries for active ingredients, chemical raw materials and medicines.

The EU needs to increase its production capacity by stimulating its industry, but also to diversify its supply chain and ensure better coordination of national health strategies. We must update the laws and the incentive system to promote new models of public-private collaboration.

The new Pharmaceutical Strategy for Europe, approved by a large majority of all political groups represented in the Parliament, responds to all this major challenges facing the pharmaceutical sector and our health systems.

It responds to the objective of making Europe the world's centre of innovation in health. The new Strategy is the ideal framework for updating and strengthening a whole new generation of EU pharmaceutical regulations for the next decade.

The new strategy will help build a pharmaceutical system that is resilient over time and resistant to crises; the vitality of the pharmaceutical sector is not only key to health and jobs in the Union, but is necessary to reinforce its strategic autonomy, especially in the wake of increased pandemic risks and fragile supply chains.

The new strategy proposes a paradigm shift:

1. It puts the patient at the centre of all health policies;
2. Ensures that all patients have access to state-of-the-art treatments;
3. Promotes further research into rare diseases, paediatric cancers, neurodegenerative diseases and antibiotic resistance;
4. Invest in a competitive European pharmaceutical industry, with supply chains that do not depend exclusively on third countries, promoting a "Made in Europe" innovation;
5. Calls for an updated, predictable and more agile regulatory system, with less bureaucracy thanks to digitalisation, and a solid framework for the protection of Intellectual Property Rights;
6. Pursues the sustainability of our national health systems;
7. And it strengthens the European Union as a global leader in health to make it more resilient to future health crises.

The new European Pharmaceutical Strategy also strengthens the link with the EU's industrial strategy, the SME strategy and the future European Health Data Space, and is part of the larger goal of a Europe of People. This is why all our health policies have patients' needs at their core.

All this will not be possible if we do not work together: European institutions, Member States, political forces, industry, the scientific community, health professionals and patients must all pull in the same direction to achieve the European Union of Health. This is the only way to ensure Health security together with the sustainability of our national health systems, leaving no patient behind.

The health of Europeans depends, more than ever, on the health of the European Union.

Reinforcing Europe as a centre for pharmaceutical innovation

ALEXANDER NATZ

Secretary-General, European Confederation of Pharmaceutical Entrepreneurs (EUCOPE)

EUCOPE
European Confederation of Pharmaceutical Entrepreneurs AISBL

A flexible legislative framework is needed to promote European competitiveness on a global stage

Europe is home to a rich innovation ecosystem with start-ups, world-class research institutions, top universities for life sciences and many small and mid-sized pharmaceutical and biotech companies. Over the past 20 years, innovation has helped revolutionise healthcare, improved patient outcomes, and transformed treatments, including making chronic conditions more manageable. At the same time, Europe has faced increasing competition from other world regions in terms of attracting investment and research[1]. While continuing to invest in R&D, the US and China significantly outspend the EU[2], and attract clinical trials in innovative technologies[3]. A targeted review of the EU's General Pharmaceutical Legislation provides an opportunity to reinforce the EU's competitiveness on the global stage, built on a future-proofed regulatory framework that continues to reward and promote innovation.

Investing in the development of novel therapies is a risky, expensive, and long-term endeavour with no guarantee of success. Innovation is the first step to access, and industry needs a viable business model to develop, manufacture and market novel therapies. As such, a robust and predictable regulatory and incentive framework plays a key role in allowing industry to undertake these risks.

The EU's legislative and regulatory framework is built on strong foundations and has supported the development of novel therapies across a range of therapy areas, including rare diseases. Looking to the future and the emergence of new technologies and approaches to evidence generation, the EU must reinforce the right regulatory environment that acts as a mentor and coach towards sustainable innovation to remain competitive. When the basis of the EU's current pharmaceutical framework was laid out in 2004, the international landscape looked different from today. One example is the role of China on the global stage. In 2004, Chinese firms were predominately generics-focused, however, in the intervening years, China has become a major innovator in the global biopharmaceutical market[4], alongside the EU and US, the latter of which has continued to invest in its own industry.

Essential elements of the EU's regulatory and legislative framework which should be retained and expanded on include the IP framework and the high quality, safety and efficacy standards. Similarly, the Regulatory Data Protection framework outlined in the General Pharmaceutical Legislation which established 8 years of data protection and 10 years of marketing protection, serves as a key incentive driving investment. Crucially, the flexibility offered to the European Medicines Agency (EMA) has been essential in allowing greater innovation for the ultimate benefit to patients. The EMA's ability to develop guidelines, scientific working groups and other structures such as PRIME have allowed the EU to respond to new developments that were unforeseen 15 years ago. The EMA's SME office also plays a key role supporting small and mid-sized companies bringing innovative

1 McKinsey & Co. (2019, May). Biotech in Europe: Scaling Innovation. https://cms.biocentury.com/assets/images/whitepapers/Biotech-in-Europe-Scaling-Innovation-McKinsey-BioCentury-Report-BioEquity-2019ps.pdf

2 European Commission, Joint Research Centre, Grassano, N., Hernández, H., Guevara, H. (2021). The 2021 EU industrial R&D investment scoreboard : executive summary, Publications Office. https://data.europa.eu/doi/10.2760/794996

3 Fernández, C. R. (2020, January 14). EU Regulations Are Holding Back Gene and Cell Therapy Clinical Trials. Labiotech.Eu. https://www.labiotech.eu/trends-news/eu-regulations-cell-gene-therapy-trials/

4 Deu, F. L., Zhang, F., & Zhou, J. (2021, November 4). The dawn of China biopharma innovation. McKinsey & Company. https://www.mckinsey.com/industries/life-sciences/our-insights/the-dawn-of-china-biopharma-innovation

solutions to patients. Such flexibility should remain in the system, complementing the predictable regulatory framework.

Reflecting on the COVID-19 experience, the EMA demonstrated the potential of a rolling review process which could be embedded within the EU system. Similarly, the derogation on GMO requirements offered to the COVID-19 vaccines underlines the need to revisit the application of GMO requirements on therapeutic solutions for patients. Removing the GMO requirement for therapeutic ATMPs would reduce administrative burdens and facilitate clinical trials.

Looking to the future, there are concrete changes that can make the EU more attractive for investment, thereby improving access. These include:

- Facilitating earlier and more frequent dialogue between regulators and developers, especially for innovative therapies such as ATMPs to accelerate assessment procedures;
- An update to the regulatory system to allow for new concepts, notably innovative and adaptive clinical trials and Real World Evidence (RWE). Drug developments for severe diseases where patient numbers are low and traditional trial designs are not feasible require alternative evidence generation methods, such as single arm trials with external controls (e.g. natural history);
- Increased acceptance, guidance on, and use of RWE by the EMA and HTA bodies in both pre- and post-marketing contexts;
- Regulatory streamlining, including reducing approval timelines to bring them in line with global standards;

The European Commission must foster an environment that promotes, rewards, and encourages research and development in Europe in the context of an increasingly competitive global environment. It is in this regard that a change to the legislation could have the greatest positive impact on the pharmaceutical environment. The EU should strike a balance between enabling access, maintaining confidence in pharmaceutical products, and supporting a sustainable industry for future innovation. We continue to explore other solutions and policy proposals that will make the EU more attractive for investment.

Despite the financing gap with the US and China, attractive opportunities await in Europe for those who focus on cultivating them. With its strong innovation fundamentals and talent pools, the EU should look to reinforce the regulatory and legislative framework so that it is appropriate for the coming decades. This should build on the excellence that is already in place and ensure that the system is sufficiently flexible to accommodate innovation and technological breakthroughs we have not yet anticipated thereby improving the continent's competitiveness on the global stage.

EUCOPE – the European Confederation of Pharmaceutical Entrepreneurs

EUCOPE is Europe's trade body for small to medium-sized innovative companies working in the field of pharmaceuticals and medical devices. We give a voice to more than 900 research-orientated innovative companies and associations active in research, development of pharmaceuticals, biotechnologies and medical devices.

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Carbon Border Adjustment Mechanism (CBAM): an effective **climate measure**

MOHAMMED CHAHIM

MEP (S&D Group – NL), Member the ENVI Committee, Rapporteur for the CBAM – Fit For 55 Package.

On the 14th of July 2021, the European Commission published the legislative proposal to set up a Carbon Border Adjustment Mechanism (CBAM) as part of the "Fit for 55" climate package. As the Parliament`s rapporteur on this key legislation, I welcome the proposal of the European Commission. However, there is room for improvements. The draft report suggests amendments on different aspects of the proposal, ranging from the climate ambition to the trade perspective of the proposal.

First and foremost, it cannot be stressed enough that the CBAM is primarily a climate measure. The general objective is to reduce global greenhouse gas emissions. We achieve this by avoiding carbon leakage. I do not want businesses to relocate and emit elsewhere instead of decarbonising their production in the EU. This makes the CBAM a carbon leakage measure and thus a clear alternative to the current carbon leakage measures in place: namely free allocation of allowances and indirect cost compensation. It is clear that a full CBAM cannot exist simultaneously with these measures. The Commission suggests a ten-year phase-in of CBAM and phase-out of free allowances. I suggest doing it faster. We need the CBAM to entry into force as quickly as feasible since it is a better alternative to free allowances, where the polluter pays principle is respected.

In a way, we can state that the positive impact of CBAM on the climate is twofold: it avoids carbon leakage, and it can replace the allocation of free allowances. As a social democrat, I want our climate measure to be feasible and stimulating for our industry. A 5-year phase-in period after a transition period of two years will provide our industry with a clear and realistic pathway. In the end, we know that we need to stimulate decarbonisation if we want to maintain green and sustainable jobs. It is a fact that an excessive allocation of free allocation has undermined our climate policies in the past.[1]

Another key modification in my draft report is the broadening of the sectoral scope. I suggest to add the chemical sector, including polymers and hydrogen, because it is both carbon and trade intensive. Including this sector means that the coverage of industrial emissions will increase by more than 10%. Additionally, it would be a wrong signal not to include this sector. Ultimately, the CBAM must mirror European Emission Trade System (ETS) as closely as possible; covering the EU ETS sectors in CBAM must thus be an objective in itself. Including the chemical sector from the beginning will provide the sector with the clarity they deserve. Technical difficulties will be are surmountable, the transition phase can be used for this.

Even though the CBAM is a climate measure in itself, we cannot look away from the obvious trade perspective of this legislation. It is of key importance to seek cooperation rather than confrontation with our trade partners, while at the same time remaining clear and strict about the objective of the CBAM. In order to achieve this, we need to be transparent about the fact that only trading partners with explicit carbon pricing policies in place, can be exempt from CBAM. Comparing regulatory measures to pricing measure is like comparing apples to oranges. It is complex and raises the question how we should incorporate regulatory measures in the EU in that case, which have been in place for years.

A climate club is a valuable instrument. We need this international commitment to climate goals to foster cooperation and solidarity. Let this - however - exist next to CBAM. We cannot be selective whit our climate policies. We cannot exempt trade partners because of the traded value. The strength of the CBAM lies in a correct and WTO-compatible implementation that does not discriminate or favours any trading partner. In the end we are levelling the playing field between EU industries and trading partners outside Europe, there is no room for exemptions. Even for Least-Developed Countries (LDC's), we should not favour exemptions. This would send off the wrong signal and could cause undesirable effects. Instead, we should make the required funds available to help decarbonise industry in LDC's. The effects of this will be felt in the amount of CBAM certificates they have to submit.

The objective is clear: the sooner trading partners install their own carbon pricing schemes, the better. This way we can make carbon border pricing redundant in due time, and until then let CBAM be an effective climate measure.

1 Special Report 18/2020: The EU's Emissions Trading System: free allocation of allowances needed better targeting (europa.eu)

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The EU owns resources for a **climate-neutral European economy**

VALÉRIE HAYER

MEP (Renew Europe-France), Member of the BUDG Committee

At the outset of the unprecedented COVID-19 crisis, the European Union (EU) rapidly organised a 750-billion-euro strong common response for both relaunching the economy and tackling the climate-neutral challenge in Europe. Following the French president Emmanuel Macron's idea, the "Next Generation EU" (NGEU) initiative was launched with its "Resilience and Recovery Facility" (RRF) economic arm, of which 30% is dedicated to green investments. Now, the common debt reimbursement (up to €390 billion, between 2028 and 2058) constitute both a challenge and an opportunity. The challenge is to pay off this debt without further taxing European citizens or cutting back on EU programmes. The opportunity is to create new own resources whose revenues (in addition to the general EU budget) will be able to reimburse the stimulus package on an annual basis. Additionally, the creation of new own resources must also meet climate-neutral European objectives.

The package proposed by the Commission on the 22nd of December in 2021, tackle European climate-neutral objectives in two ways: 1) emitting behaviour will be taxed, giving positive incentives to climate-neutral activities, and 2) new revenues coming from those taxes should increase the general budget of the EU, thus permitting greater spending to achieve these objectives.

The package from the Commission encompasses:

1. A **carbon border adjustment mechanism ("CBAM")** that aims at supporting the reduction of global carbon emissions, by addressing the risk of carbon leakage. Within this mechanism, declarants will need to acquire enough certificates to cover the emissions of their imported goods. In this way, this new method introduces more equity between companies that have lower environmental criteria abroad and European firms producing directly on the common market.
2. **An amendment of the actual EU emissions trading system ("ETS 2")** aiming to increase the scope of sectors assessed by the carbon market such as the maritime sector, the road transport sector, or the building sectors. Such amendment in the European carbon market increases EU ambitions in reducing free allowance on the market through regulatory power.
3. **A basic tax on the largest companies' profit** aiming to provide more equity between companies' taxation. Following the 2021 agreement between 137 OECD countries, the "Pillar One" of the agreement provides for the re-allocation of a share of the residual profits of the largest and most profitable multinational enterprises to end market jurisdictions where goods or services are used or consumed. The Commission proposes an own resource equivalent to 15% of the share of the residual profits of the largest and most profitable multinational enterprises that are reallocated to the EU Member States under the agreement on a reform of the international tax framework.

As said previously, the creation of both CBAM and ETS correspond to several objectives. As potential new own resources, both will generate income for the EU general budget. Additionally, both also serve the EU climate-neutral objectives. CBAM aim to restore fairness between carbon emissions of local and imported product. The ETS reinforce the carbon emission trading system within the EU, thus aiming to degrowth European emissions.

Therefore, the EU objective of paying the common debt without further taxing European citizens or cutting back on EU programmes would be achieved. The most emitting (ETS2 and CBAM) and rich (OECD agreement) companies would rather be taxed to pay back the Economic recovery plan.

The share of own resources in the European budget has been in a long process of decline since 1988. The treaty of the functioning of the Union is very clear on the matter: "The Union is equipping itself with the means to achieve its objectives and carry out its policies. The budget shall, without prejudice to other revenue, be financed entirely from own resources" (Article 311). In contradiction with that spirit, the European budget is *de facto* fed by less than 10% of its resources and more than 80% of the budget comes from the state's contribution. However, the entry into force of a plastic tax in January 2021 and the Commission's proposal in December herald a new page in the EU budget.

Nevertheless, if voted, these new own resources would only cover the annual reimbursement of the recovery plan. Therefore, a second legislative package will be proposed by the Commission before 2024 to introduce other own resources. At a time when the EU is expected to act on all issues when its limited budget is required on so many programmes, the objective is to concretely increase the European budget to finance new EU programs.

The role of **Energy Agencies** and the **challenges** of the **energy transition**

NELSON LAGE

President of ADENE- Portuguese Energy Agency /EnR Presidency for 2022

Energy is at the top of everyone's concerns and is affecting the everyday lives of citizens. Present at all greatest revolution in human civilization, energy could equally be responsible for the demise of the world as we know it. We live in a climate emergency and there is a real risk that we will fail to achieve our carbon neutrality goals. We are failing the pledges we have made to humanity.

Renewable energy production is not keeping up with the increase in global demand, in particularly for electricity, which is crucial for decarbonization. The specter of a military conflict in Europe, warrants our worst fears with the corollary that the European Union will fail to meet the goals of neutrality carbonic.

Geopolitical tension in the last decades has been affecting energy and gas prices resulting in a real energy crisis. Europe's dependency from external suppliers and in some cases, a considerable dependence, in the event of war, lead us to inflation soaring and fuel prices reaching absolute records.

Europe's moment of truth is here. The energy transition is having an asymmetric impact among Member States. The forecast of lower production in France, due to the cuts in nuclear reactors, combined with the drought in southern Europe that has halted production of hydroelectric energy is cause for further spikes in energy prices.

Furthermore, regions such as the Alps, where snow quotas are low will significantly affect the overall water reserves.

The persistent volatility of energy prices will have serious repercussions on all markets and is already being felt by consumers who, in addition to paying more for energy, is being impacted the wider inflation in the prices of everyday items.

All this comes at a time when the European Commission launched a heated debate on the future of energy by indicating that natural gas and nuclear are green energies. The European Commission's decision to include gas and nuclear in the EU taxonomy doesn't yield the approval of Member States. Such a stance from the Commission could ultimately be construed as a setback, in so far as it is at odds with the position of the European Parliament that approved (15 January 2020), by an overwhelming majority, the European Green Deal, in so much that those two sources of energy were considered to be non-sustainable.

This change in the position of the European Commission was prompted by an abrupt rise in the price of energy related to the recovery of the global economy in the aftermath of the COVID-19 epidemic, while investments in renewable sources, such as wind and solar, are failing to meet the energy needs of European countries.

Europe is at a crossroad. On the one hand, it wants to reduce greenhouse gases by at least 55% by 2030 and achieve carbon neutrality by 2050, but on the other hand, it is failing to respond to the growing demand for energy coupled with the lack of renewable energy capacity. Against this background, the European Commission is considering opening the door to gas and nuclear energy, as a solution to a crisis that promises to worsen, considering these energies as substitutes for fossil fuels.

If Europe goes ahead with such a stance, we could be jeopardizing new investments in renewables and backtracking in the response to the climate emergency. At the same time, we are discrediting investors, because what was not sustainable yesterday seen viable today under pretext of the current crisis. Will the diversity of the European energy mix and the need for an urgent response to the ongoing energy crisis justify such a change

of heart in the energy taxonomy? Will the gamble on non-renewable sources, compromise EU strategy on decarbonization?

Rather than mudding the waters of sustainability and bring instability to the energy sector by, suggesting new investments in gas and nuclear, Europe should progressively reinforce the introduction of green hydrogen into its energy mix. Natural gas is important in the energy transition, and there is no energy transition without it, but only as a steppingstone and its replacement is inevitable and thus should prompt an unwavering commitment to our own endogenous clean resources that will free the Union from the unreliable partnerships with potential belligerent countries.

The challenge of the energy transition is decisive in the sustainability we aspire to achieve. We all deserve a say in it. It is not the sole responsibility of governments. Such a change should consider the full spectrum and engagement of our societies, encompassing citizens and the private sector.

Such a change should not be made without the support of national energy agencies, whose role is to stimulate policy makers and citizens to accelerate the transition. At forefront of which is the European Energy Network (EnR).

ADENE, whose presidency of EnR is beginning now, is strongly committed to the changes that must urgently be implemented. It is important to take advantage of our network and its central role of proximity to those that can best leverage and the transition measures that are at hand.

The energy agencies are an essential partner in Europe's commitment to valuing its endogenous resources and accelerating the adoption of renewable energies.

Due to their closeness to people and territories, energy agencies manage to deliver the information that citizens need, while guaranteeing technical rigor and serving as support for changing behaviors and mentalities.

Whilst it is true that Europe needs to electrify its economy with more renewables, investing in solar and wind, and in the introduction of green hydrogen in its networks, it is also true that these ideas and projects arrive in a clearer and more objective way with the work carried out by energy agencies, because of their proximity with local entities, city councils, businesses, and citizens.

The energy agencies must be active agents in the public understanding the causes at the root of global warming and the measures needed to reduce greenhouse gas emissions. This path can only be taken in partnership and cooperation, disseminating public policies for energy, but also providing the necessary information to accomplish the energy transition.

The future of the energy transition is made by energy efficiency, with smart cities, renewable energy communities and electric mobility, and last but not the least with energy agencies.

BERND SCHÄFER
CEO of EIT RawMaterials

Europe must **invest** in the **critical raw materials** sector to develop its own **strategic autonomy** and to re-industrialise key **industrial ecosystems**

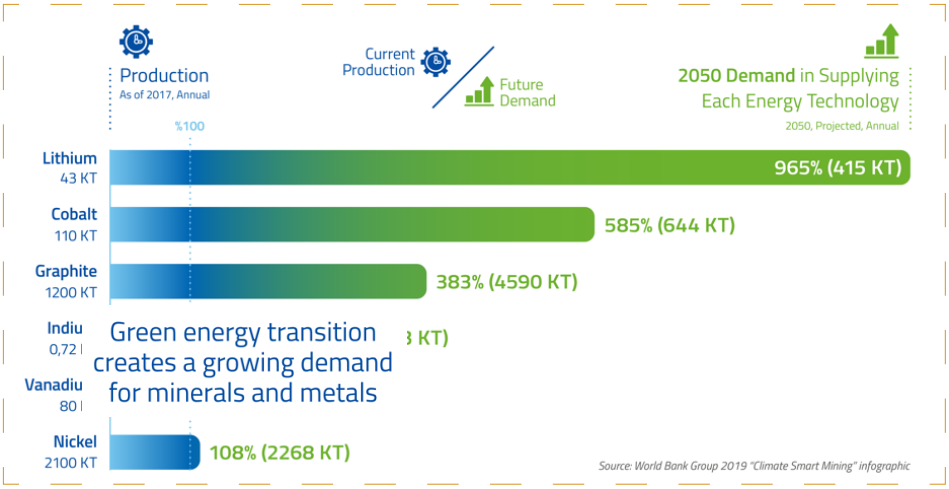
Critical raw materials are key enablers of the green and digital transition and are now of critical importance to preserving the global competitiveness of the EU's most strategic economic sectors. They are fundamental for the EU to develop its own strategic autonomy, and to re-industrialise key European ecosystems. In particular, critical raw materials are crucial for transforming the EU energy system towards a CO_2 neutral energy production and to achieve the target of reducing net greenhouse gas emissions by at least 55% by 2030.

The development of renewable energy systems will require unprecedented supplies of critical raw materials. Europe is rich in raw material resources, for example, a total of 14 projects from mine and 'urban mines to magnet' were identified by the European Raw Materials Alliance (ERMA). These projects could form the foundation of a European rare earths industry, capable of delivering at least 20 percent of EU demand for raw materials by 2030.

There are countless other reserves of raw materials throughout Europe, that are yet to be utilised, that is, natural resources as well as urban mine resource potentials. But it is the access to sustainable raw materials from mining which is of paramount importance to enable the quick turnaround of a massive industrial and societal transition aiming for minimising greenhouse gas emissions and the reduction of the impacts that cause global warming.

A 2020 World Bank Group report finds that the production of minerals, such as graphite, lithium and cobalt, could increase by nearly 500% by 2050, to meet the growing demand for clean energy technologies. It estimates that over 3 billion tons of minerals and metals will be needed to deploy wind, solar and geothermal power, as well as energy storage, required for achieving a below 2°C future (Source: Worldbank.org). For e-car batteries and energy storage alone, Europe will for instance need up to 18 times more lithium by 2030 and up to 60 times more by 2050 (Source: EC, Critical Raw materials for Strategic Technologies and Sectors in the EU, A Foresight Study, 2020).

Europe's strategic dependencies and the key actions we need to take are well-described in the Critical Raw Materials Action Plan of the European Commission and their 2020 New Industrial Strategy. A more specific Action Plan on Rare Earth Magnets and Motors has been developed under the umbrella of ERMA, i.e., together with a wide stakeholder group involving industry, academia, and wider society.



Both the covid-19 pandemic and the current geopolitical issues we face in Europe now have shown that the lack of a European mining industry as well as the lack of sustainable supply of secondary critical raw materials, has rendered Europe more vulnerable to supply chain disruptions and shortages. For example, in 2020 China provided more than 98% of the EU's need of rare earth elements and 93% of Magnesium, Turkey provided 98% of the EU's need of borate and South Africa provided 71% of the EU's need for platinum. Additionally, China, Turkey and South Africa are all economies whose environment, social and governance (ESG) standards substantially differ from European ones which therefore, also carries an element of risk.

The current shortages and supply disruptions of other critical raw materials, like the predicted magnesium shortage, raises the risk for EU industries. The subsequent price inflation may be only a minor problem, in comparison to the cost of not having available raw materials at all.

Europe has what it takes to lead the Green transition globally

In light of the tragic European geopolitical events unfolding at the time this article was written, the ability for Europe to set up inter-European value chains between EU member states and further afield is more urgent than ever. For example, rare earths mined in Sweden or Norway can be processed in Estonia and Poland; manufactured into magnets in Estonia, Germany and Slovenia; to be used in cars built in France, Germany, or Sweden. Europe must also diversify its supply chains with other resource-rich countries by establishing new trade and cooperation agreements.

Europe can also establish financing arrangements using both, public and private finance. Recently launched public funding tools include the Just Transition Fund, the Innovation Fund, and the so-called Important Projects of Common European Interest (IPCEI). Europe has shown in other business areas that common standards, for example, around recycling, can change behavior and drive innovation. European industry must invest not only in primary raw materials extraction but also in the development of advanced materials, smart product designs, and refining and recycling facilities, which are critical to secure a dependable supply of secondary raw materials, mostly from industrial actors.

The role of ERMA and EIT RawMaterials

In September 2020, ERMA was launched by Commissioner Breton and Vice-President Šefčovič with the aim of making European industrial ecosystems economically more resilient. ERMA, (which is managed by EIT RawMaterials), is therefore firmly embedded in the European Commission's policy framework.

ERMA's community of currently 600 stakeholders of businesses, governments, start-ups, R&D, NGOs and academia partners regularly consult to identify regulatory bottlenecks as well as a number of substantial investment opportunities. Qualifying entities and organisations are able to become members of ERMA in order to take advantage of connecting across the entire stakeholder base to form new, sustainable industrial ecosystems. By anticipating key eco system raw materials needs, ERMA defines priority activities and groups them in so called 'Clusters' in which information is exchanged and policy suggestions are developed. So far, an action plan has been issued for the Rare Earth Magnets and Motors Cluster and 30 pre-screened projects have been identified for strategic investment in this area, worth more than 10 billion euros.

Supporting business innovation is a primary focus at EIT RawMaterials. European innovation is already setting a new world standard which is making mining more attractive as an industry from both a business and a workforce perspective. The advanced technologies developed include equipment automation, digital tools and battery powered equipment. For example, Epiroc, a battery-electric equipment producer, is committed to halving CO_2 emissions from the downstream use of their equipment as well as from their own production lines and transport, by 2030.

At EIT RawMaterials, we place great strategic focus on providing the right tools to boost the potential for European startups. To date we have worked with over 360 start-ups that contribute to one of our strategic priorities. These priorities include securing raw materials supply, designing material solutions, or closing materials loops. Each year at the EIT RawMaterials Summit in Berlin, start-ups are introduced to established businesses, investors, politicians, and entrepreneurs.

Education is another key focus area for EIT RawMaterials. European education institutions must become more aligned with raw materials industrial requirements and advancements. In fact, with institutions like TU Bergakademie Freiberg and Kungliga Tekniska Högskolan (KTH), Europe has the longest academic educational history in mining and metals in the world. EIT RawMaterials has signed on 70 partner universities who are collaborating with leading business entities across the entire value chain within R&D and curriculum design. The EIT RawMaterials Academy provides for an entire ecosystem of learners ranging from PhD students, Masters' students, industrial partners, professionals within the raw materials sector and wider society. Already 200,000 students have experienced the benefits of its education offerings.

Why does this focus on innovation, education and investments matter? According to Eurostat projections, seven core strategically important ecosystems that are reliant upon domestic raw material supply, could represent as many as 32 million jobs by 2030 in Europe. Securing these jobs requires a skilled workforce, innovative approaches, and strategic investments in Europe along the entire raw materials value chain.

With these bold, appropriate and ethical actions, Europe can become the most secure, and sustainable global provider of critical raw materials. But we must act now.

DAVID ARCHER

CEO of Savannah Resources

Responsible and **innovative domestic lithium production** will fuel **Europe's cars** and the **EU's strategic autonomy**

The EU's twin green and digital transition is reshaping Europe's societies and economies. Unparalleled efforts are undertaken by the European institutions to make sure Europe is not only ready for this challenge but prepared to reap its benefits. The European Green Deal and Europe's Digital Decade are ambitious programmes that already led to concrete actions such as the "Fit for 55" legislative package. In parallel, the international context is also evolving dramatically, driven by societal transformation, power politics, and often a mixture of both.

Europe will have its hands full to define its place in this new world. Far-reaching new climate and energy rules will soon come into existence while geo-economic and geopolitical tensions continue to increase. EU decision-makers must navigate these uncharted territories carefully and with great consideration. While there is no silver bullet to the buildout of a new, sustainable energy architecture, at Savannah Resources we believe that domestically produced lithium enabling electric mobility is a unique opportunity for Europe's strategic autonomy and de-carbonization ambitions, while improving living conditions for millions of Europeans.

As Europe seeks to decarbonize its economy and transport sector through electrification, it is threatened with becoming ever more dependent on expensive, high-carbon imports with oftentimes questionable provenance. This is notable the case for the very metals required to power Europe's fast-growing electric vehicle fleet, and in particular lithium. As EU electric vehicle sales grow rapidly – 137% year-on-year in 2020[1] –projected future demand of lithium is expected to grow considerably, up to 18 times by 2030, and up to 60 times more by 2050[2]. While it has been used for decades in a variety of applications, securing access to lithium sources has now become a question of strategic autonomy for Europe.

The importance of e-mobility to bring down CO_2 and particulate emissions is well understood. At the same time, there is less awareness that the production and manufacture of the key raw materials and key components for the EU's electric vehicles are often happening in distant nations that supply the world with lithium raw materials – such as Australia and Chile – or with lithium chemicals and batteries – such as China. The imbalance in the world's lithium-ion battery production is particularly critical, as Europe currently manufactures less than 1% of all global batteries, compared to more than 90% in Asia[3].

EU policymakers demonstrated foresight when they identified battery production as a key interest already years ago. The creation of the European Commission-led European Batteries Alliance – of which Savannah Resources is a proud participant – was an important first step, but much more still needs to be done to achieve a true independent, circular value chain for batteries in and for Europe, as illustrated by the new EU Regulation on sustainable batteries[4].

Europe remains particularly vulnerable when it comes to certain strategic commodities, and the EU's lack of domestic supply sources becomes a fundamental geopolitical concern when international trade flows are interrupted. The tragic developments in Ukraine have yet again highlighted the possible implications of Europe's high dependency on fossil fuel imports, but the issue goes far beyond just oil and gas. The future of our green mobility relies on electric vehicles and therefore also on lithium. Ensuring the security of its supply in the future will be critical to strengthening Europe's strategic autonomy.

The French Presidency of Council of the EU considers securing the supply of raw materials for European industries one of its key priorities[5]. In addition, the European Commission placed sustainable and responsible extraction at the heart of its green minerals policy, classifying lithium as a critical raw material in 2020[6]. Companies and governments across the continent are now racing to supply the EU with its own, responsibly mined sources of lithium. Feasibility studies are ongoing in Austria, Czech Republic, Finland, Germany, Portugal and Spain – which are home to the EU's largest reserves – as well as in the United Kingdom.

The EU has high hopes for Portugal as a responsible, long-term, low-carbon supplier of lithium. Portugal has a long tradition of mineral production and is already Europe's largest lithium producer for ceramics.

1 S&P Global Platts, Europe overtakes China in EV sales growth in 2020, January 2021

2 European Parliament Research Service, New EU Regulatory Framework for Batteries, July 2021

3 European Commission/European Technology and Innovation Platform on Batteries – Batteries Europe, Strategic Research Agenda for Batteries, July 2020

4 European Commission, Proposal for a regulation concerning batteries and waste batteries, December 2020

5 French Presidency of the Council of the European Union, Informal Meeting of Ministers for Industry and for the Internal Market, January 2022

6 European Commission, Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability, September 2021

Northern Portugal holds some of the bloc's most promising lithium reserves, as well as an easy connection to international shipping routes and to renewable power infrastructure. This is where Savannah Resources is developing the Barroso Lithium Project to realise Europe's largest resource of hard rock spodumene lithium. Through a 110 million EUR investment programme and significant job creation in an ageing region, Savannah aims to create a domestic, premium, carbon-neutral lithium concentrate. By promoting responsible mineral production within the EU, the project will contribute to the collective shift from a market that is highly dependent on external suppliers to a diversified, local and autonomous solution.

Together with its partners Savannah is working on ensuring that the Barroso Lithium Project becomes a catalyst and an indispensable first link in a new European green value chain of strategic importance. This is an objective we share with the Portuguese government[7], which aims to develop Portugal as a green energy hub of continental stature. The country's lithium mineral endowment has already catalysed two major downstream industry initiatives: energy major Galp and Swedish battery manufacturer Northvolt announced a joint venture for the development of a conversion plant to produce lithium hydroxide, and Bondalti, a major Portuguese chemical producer, is spearheading another such initiative.

However indispensable lithium is for Europe's green mobility ambitions, it is clear to us that its extraction brings its own challenges. EU citizens rightfully expect nothing short of the strictest oversight and implementation of operational standards. This is why Savannah is fully committed to making its Barroso Lithium Project an example for socially and environmentally responsible mineral production. Our aim is to develop a template for modern, decarbonized, high-tech mineral production that contributes to the circular economy and local communities. For this reason, we will use only the most advanced technologies and practices, such as an all-electrical mining fleet, transparent and real-time monitoring of environmental performance and progressive rehabilitation throughout the project's lifespan.

Central to our approach will be to guarantee that the project is beneficial for local communities. Our objective is to directly generate more than 200 long-term high-quality jobs that build enduring careers, while also implementing local sourcing preferences that will help create an additional 600 jobs in the region. Furthermore, through an extensive benefit sharing plan with the creation of a foundation, Savannah is committed to making sure the profits of the innovative Barroso Lithium Project reach every member of the community.

Europe should embrace the opportunity of domestically produced lithium, as it uniquely contributes to the twin green and digital transition, while also strengthening strategic autonomy at the same time. Policy-makers in Brussels should therefore create and encourage the development of the right regulatory and financial incentives to enable a circular value chain powered by domestic lithium.

At Savannah Resources, we are ready to play our part. We are committed to engage with all interested stakeholders in an open and transparent way throughout this process. The EU's environmental goals and its raw materials' policy should not and must not be at odds: ensuring strategic autonomy and decarbonizing our economy through lithium-powered electric mobility are two sides of the same coin. The transition to a low-carbon economy cannot mean we are replacing our existing reliance on externally sourced fossil fuels with reliance on externally sourced raw materials. By investing in developing local sources of lithium, Europe can futureproof its economically critical automotive industry, while creating thousands of new high-tech jobs across the Union, driving forward the twin transition.

7 Observador, [Portuguese] Environment Minister says lithium is "essential for energy transition", February 2022 [Portuguese]

Savannah Resources' Barroso Lithium Project is located in northern Portugal, approximately 145km northeast of the City of Porto and the industrial port of Leixões

Generalizing the use of **hydrogen** in Europe to **strengthen Europe's energy autonomy**

CHRISTIAN EHLER

MEP (EPP Group – Germany), EPP ITRE Coordinator

With the adoption of the European Green Deal, hydrogen and its potential for building bridges between electricity and fossil energy from gas with the aim of ensuring a successful green transition and achieving climate goals has become a widely discussed topic in both academic and political circles in the EU.

In this context, a hydrogen strategy for a climate-neutral Europe, presented by the European Commission in July 2020 and aimed at boosting hydrogen use in the industry and transport sectors, serves as an important signal that the EU recognizes a crucial significance of low-carbon energy from hydrogen in the transition to a decarbonized economy.

If the European Union is serious about its climate ambitions, it needs to be admitted that the electric scenario is not an economically and technically viable option for many industries. This is where the potential of hydrogen, which reconciles gas and electricity, comes to the fore.

It is widely acknowledged that hydrogen can contribute to the decarbonisation of such industries where other alternatives to fossil fuels might turn out to either be not feasible or substantially more expensive. Therefore, this energy source today seems to be the only possible option to effectively decarbonize many sectors, including heavy industries, transport, and heating, at the same time addressing demand and seasonality.

The devil will be in the details, but the fact that the Commission recognizes the importance of low-carbon energy, both from gas and from hydrogen, in the transition to a decarbonized economy is an important signal. Our industry needs certainty about its energy supply and a clear pathway for its transition.

The biggest step with regards to facilitating the use of hydrogen on the EU level so far has been the Hydrogen and Decarbonised Gas Market Package, published by the European Commission in December 2021, which highlights the importance of hydrogen in the future energy system. This package is a crucial counterpart to the Fit For 55 package to develop this pathway from a regulatory side. It really has to facilitate the integration of renewable and low-carbon gases in the exiting gas grid and enable the development of dedicated hydrogen infrastructure and market, allowing hydrogen to become a key component of the energy sector. This gas package must be the tool to deliver this ambitious decarbonisation trajectory in the gas sector.

A European Hydrogen Backbone can only create an opportunity to accelerate decarbonisation of the energy and industrial sectors whilst ensuring energy system resilience, increased energy independence and security of supply across Europe with the right political framework. We need to ensure investments in the conversion of natural gas networks, which will form an essential basis of the future hydrogen infrastructure. Otherwise, the development of a hydrogen infrastructure connected throughout Europe will not be possible in the long term, as the necessary line sections are not available and accordingly no internal market for hydrogen trading is created.

We have to focus on the unbundling requirements for H2 infrastructure operators. The proposal provides for horizontal unbundling, which requires natural gas system operators to carry out hydrogen transport in a separate company. Two points are highly problematic: Cross-subsidisation is possible as an exception and under conditions (transparent, temporary, etc.) and the establishment of a European Network of Network Operators for Hydrogen (ENNOH), which develops the Hydrogen Network Development Plan and Network Codes. With ENTSOG there is already an established player who is best suited for the role. The unbundling

schemes for the natural gas and electricity sectors have proved their worth. There is neither an objective necessity for the new regulation obviously planned by the Commission nor have the possible disadvantages of the transfer of the previously applicable unbundling rules been explained. The role of the Gas Package as a regulatory framework creating necessary incentives to decarbonize gas sector is crucial in ensuring that the 2030-50 climate goals will be reached.

A high priority in the context of increased use of hydrogen should be given to introducing measures aimed at improving energy security and resilience of the EU's energy sector: an issue emphasized in the Gas package. As stressed by the EPP group in its assessment of the 'Fit for 55' Package, along with the development of dedicated hydrogen infrastructure and domestic hydrogen market, strategy and infrastructure for hydrogen imports from partner countries should be established without creating new dependencies. One of the ways to do that is to ensure that the Gas package is in line with the Third Energy Package and its unbundling rules.

Hydrogen infrastructure development is a way of moving forward towards a massive rollout of hydrogen. The build-up of such infrastructure should take into account the necessity to navigate and adjust the rollout to the hydrogen demand in the process of transition. Moreover, the general principles of infrastructure regulation should be established to ensure an EU-wide harmonization of standards. Infrastructure that enables a robust and independent energy market is a key component to ensure security of supply in the European Union.

As pointed out by the EPP group with regards to the renewables infrastructure, the inclusion of renewable and low-carbon gases, including hydrogen, in the exiting gas grid should be promoted, to allow hydrogen to become a key component of the energy sector. Making use of synergies between gas and electricity will allow to make a transition in the most cost-efficient way possible: via integrated network planning between hydrogen, gas and electricity. Therefore, integrating these three energy sources together and enabling a joint planning of energy networks is of utmost importance for determining overall optimal pathways for transition.

Finally, in order to not only ensure security of supply but also to create a globally competitive hydrogen industry, special attention should be placed on fostering the research, development and innovation across all key hydrogen technologies, which should be complemented by favorable regulations facilitating hydrogen market ramp-up.

To sum up, a clear regulatory framework for hydrogen use is needed in order to, firstly, avoid monopolies and create an open and competitive market in the EU, and, secondly, ensure security of supply and resilience of the EU's energy system. A balance between sustainability, affordability and security of supply should therefore be found.

How **small molecules** support the EU **strategic autonomy**

LAURENT **DUBLANCHET**

AIR LIQUIDE, VP European & International affairs

Driven by the geostrategic urgency and EU's commitments to the Green Deal, Air Liquide sees essential small molecules such as hydrogen, oxygen or nitrogen, that are necessary for life and energy, as levers to support the EU autonomy in the energy and digital transition as well as for industrial growth and societal development. As a matter of fact, the private sector actively contributes, thanks to its experts and industrial leaders, to the realisation of European's Autonomy and Green ambitions.

It is paramount to emphasise the strategic role of a market-driven approach to the economy and of an on-going dialogue between the private and public sectors to implement regulations, standardisation and financing systems in line with the reality on the field. This is particularly needed in order to ensure the EU's autonomy and resilience whether it is in the energy, climate, healthcare and digital sectors. The expected shortages in natural gas need to be taken into account in designing future regulation and earmarking public funds.

Ensuring an autonomous supply of clean energy across Europe

The years 2020-2030 should be the decade of the hydrogen uptake: the EU has a unique competitive advantage and position to take up the challenge thanks to the diversity of its actors mastering the key technologies and its leadership through the Green Deal, to be a world leader in the environmental field.

The next decade focused on a dual and concurrent objective: the development of the **production of decarbonised hydrogen from electrolysis technology and the CO2 emission reduction through its capture in existing processes**. Indeed, a pragmatic approach is needed, as the focus must be on the decarbonisation objective and all technologies that can play a role in achieving this goal should be supported through specific regulation and funding mechanisms to help decarbonise European hard to abate sectors while preserving its competitiveness.

Indeed, while hydrogen production is the main starting point for the implementation of an integrated hydrogen economy in the EU, new markets will only develop if the whole hydrogen value chain is structured around the development and increasing availability of clean energy sources across Europe. The EU strategy of July 2020 sets a stepstone approach to the development of such a hydrogen framework. It is key to now ensure that these ambitions are translated into concrete actions, i.e. starting with scaling up production in industrial clusters. **Europe should first ensure as much as possible local hydrogen production capacity of clean hydrogen and its downstream applications, before subsidising expensive new or refurbished Gas transport to import hydrogen into Europe.**

** On March 8, Air Liquide received support from the French government, subject to a final validation by the European Commission, to launch its Air Liquide Normand'Hy large-scale renewable hydrogen production project. This electrolyzer of an initial 200 MW capacity, which should notably provide renewable hydrogen to TotalEnergies' Normandy refinery, will use Siemens Energy proton-exchange membrane (PEM) technology. This project will significantly contribute to the creation of a French and European low-carbon hydrogen sector and to the decarbonization of the Normandy industrial basin. It will also contribute to the development of heavy duty hydrogen mobility in this important industrial area. The creation of that ecosystem with our partners demonstrates the will and the capacity of industrial companies to bring concrete solutions to the fight against global warming. This is in line with Air Liquide's Sustainable Development strategy, which aims not only at reducing the Group emissions but also at providing a range of solutions to decarbonize the industry.*

The use of the ETS Innovation fund will be instrumental, notably to support the deployment of CO2 capture technologies and the implementation of European collective projects in that field. The recent large projects award decision taken by the Commission illustrates the importance to first decarbonise society, while hydrogen upscaling is being promoted in parallel to ensure Europe's clean energy supply autonomy and support the emergence of new markets.

In parallel, we should address the development of new markets. In the light of the geopolitical crisis and as the transport sector is today heavily dependent on fossil fuels, the current conflict strengthens the case for policymakers to accelerate the clean energy transition. It is becoming imperative for both security of supply and climate action to support the installation of clean energy infrastructures and alternative fuels-powered engines, for which hydrogen has a first line role to play. **Whether in air, land or water, clean hydrogen and hydrogen-based solutions are among the most promising technologies to deliver zero emission operations**. These characteristics make hydrogen and its many forms an essential tool to achieve the European goal of carbon neutrality combined with energy supply autonomy. To support this ambition, Air Liquide is working together with major players of the land mobility sector to develop the use of hydrogen with major OEM as well as prominent actors in the air transport industry

Securing European industrial competitiveness using agile frameworks and tools

The implementation of a EU smart policy framework is needed whether it is for energy, but also for the healthcare, microelectronics or space sectors that have been identified as top priorities on the European agenda.

First, starting with "IPCEIs" to develop important projects of common interests across Europe. This tool is a major example to illustrate how industrial stakeholders all along the industrial value chain, no matter their size and geographic localisation in Europe, are committed to collaborate and participate together in the ramping up of the EU critical sectors. **Moving on quickly with concrete implementation of IPCEIs** would contribute to strengthen the competitive advantage of the European industry.

In parallel, the European drive for strategic autonomy will go with the technological leadership in semiconductor technologies and applications. Air Liquide has welcomed the European Chips Act released early February.

Indeed, we believe that this is instrumental to **creating a European integrated microelectronics ecosystem** notably by supporting EU companies, including upstream industries such as Air Liquide that are producing and supplying critical molecules to the front-end semiconductors manufacturers. Europe must be able to continue to rely on open markets to secure the shipping of critical materials from third countries partners, like in Asia or in the US. With the view to build a European semiconductor ecosystem, it is indeed necessary that upstream industries, whatever their structural size, have an improved access to critical and raw materials.

Developing its **space sector is also a must to strengthen Europe's strategic autonomy**. Involved in space exploration, Air Liquide develops energy production and storage technologies to support future missions. Our expertise also includes launch infrastructure, on-board cryogenics, and ground test equipment for launchers and satellites. We contribute to the Commission's Expert Group on Policies and Programmes Relevant To EU Space, Defence, and Aeronautics Industry.

Last but not least, beyond industrial sectors, the covid crisis has highlighted that the EU and Member States need to do more regarding preparedness and response planning for epidemics and other serious cross-border health threats, and that national healthcare systems alone are no longer enough. In this global context, Healthcare players and decision-makers are facing the dilemma of increasing patient volumes and healthcare systems' economic sustainability. Shifting from a current commoditized model whose value relates to the provision of people and devices, to a model whose value relates to the outcomes for the patient is desirable to **prepare Europe to develop stronger and less dependent health systems in the long term**. Air Liquide wants to contribute and be a partner in the healthcare systems' transformation, as a major world player in healthcare, an expert in chronic diseases follow up at home and new places of care, and supplier of services and medical gases solution for hospitals.Also, Air Liquide provides specialty ingredients used in the production of vaccines.

Ensuring a trusted relationship between private and public actors.

European healthcare and industrial actors cannot solve the transformation alone. That is why we must work together with the public authorities as trusted partners to build diverse and resilient supply chains. As the playing field is both international and local, the EU private sector needs **financing, regulatory stability and quick policy decision making to support the markets' creation and maintain Europe's position in the worldwide race**. After that, it's up to the economic actors to develop concrete projects that will fulfil the EU's bold strategic autonomy ambitions.

Alliances, such as the European Launchers Alliance, the European Clean Hydrogen alliance and the Semiconductors alliances, are expected to play a central role to support the EU ambitions in this regard and must be focused on industrial deliverables based on a close collaboration between the public and private market stakeholders.

Europe forges ahead with **clean hydrogen**

BART **BIEBUYCK**

Executive director of the Clean Hydrogen Joint Undertaking

More than ever, Europe's consumers and businesses need a sustainable, secure supply of energy that doesn't cost the earth. With only water and renewable energy needed for production, and almost zero emissions in its use, clean hydrogen is at the heart of the EU's strategies for a climate-neutral Europe.

Clean hydrogen has a critical part in the fight to keeping global warming below 1.5°C.

Energy production and use generate more than 75% of Europe's emissions. A switch to clean hydrogen in major polluters such as transport, industry and buildings can drastically curtail greenhouse gases, as well as guarantee an independent energy supply.

Thanks to far-sighted investment and to cooperation between the EU, industry and researchers, Europe is a global leader in research and deployment of hydrogen technologies.

The technology is becoming a commercially viable solution for industry, transport and homes in ways only hoped for a few years ago. As clean-hydrogen production scales up and applications increase, the EU's target price of EUR 1.8 per kilo by 2030 is within reach and looking increasingly competitive against hydrogen produced from natural gas.

A strategic resource

The European Green Deal[1] has set the ambitious target of net-zero emissions by 2050. This is to be achieved by uptake of renewable fuels, like clean hydrogen, in sectors in urgent need of decarbonisation, and by renewables providing 40% of Europe's energy mix.

Given the centrality of hydrogen to Europe's clean-energy future, the European Commission has published *A hydrogen strategy for a climate-neutral Europe*[2] in 2020. This document describes renewable and low-carbon hydrogen as "a key building block" for a zero-pollution economy in 2050, when it could make a vital contribution to a sustainable and secure energy mix for businesses and households alike.

Hydrogen is also pivotal to the European Commission's Fit for 55[3] strategy, which has set the equally challenging target of reducing greenhouse gas emissions in the EU by 55% by 2030. Measures for network planning, regulation and certification support a shift from natural gas to low-carbon hydrogen in Europe's grids and energy supply.

Today, hydrogen is only 2% of the EU energy mix; the EU's hydrogen strategy predicts that its share could reach 14% by 2050.

For this to become a reality, hydrogen production and demand must continue to grow together. The hydrogen strategy has identified strategic targets for research and investments, such as large wind and solar plants for gigawatt-scale hydrogen production, and ways to expand market demand through broader and increasingly affordable applications.

The European Commission's Hydrogen and Decarbonised Gas Package[4] provides further support for hydrogen. Published in December 2021, this proposes conditions for phasing out natural gas in favour of renewable and low-carbon gases, including clean hydrogen. The package aims to foster infrastructure and a regulatory framework for a hydrogen market that delivers hydrogen smoothly from regions with the resources for high production to industries and consumers across Europe.

Individually, these policy packages provide welcome support for clean hydrogen. Together, they will create a virtuous cycle of production, demand and distribution that will build momentum for new industries, sustainable jobs and global export opportunities in a dynamic hydrogen market.

Global leader

My optimism about Europe's hydrogen policy is based on more than a long-standing commitment to this field. It is driven by the outstanding success of EU investment in hydrogen technology, much of which has been delivered through the Fuel Cells and Hydrogen Joint Undertaking[5] (FCH JU) the predecessor to the Clean Hydrogen Joint Undertaking (the Clean Hydrogen Partnership)[6].

Thanks to well-targeted and consistent funding, Europe is a major innovator in this field. Of the world's more 200 new hydrogen projects announced at the beginning of 2021, 55% are in Europe.

As an example of how far ahead we are, Europe is one of a handful of regions where clean hydrogen is replacing carbon-derived hydrogen for steelmaking and refineries, reducing heavy carbon footprints. The hydrogen that makes this reduction possible is from new-generation electrolysers powered by renewable energy, the results of EU investment in this technology before the rest of the world.

As the first mover, Europe's researchers and businesses lead the global board in terms of numbers of patents and publications in clean electrolysis. Europe also has some of

1 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

2 A hydrogen strategy for a climate-neutral Europe

3 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0550

4 Hydrogen and Decarbonised Gas Package

5 https://www.fch.europa.eu/

6 https://www.clean-hydrogen.europa.eu/index_en

the world's largest electrolysers in operation, taking industry into the low-carbon age.

Among these are a 6-MW plant in Linz in Austria that replaces fossil-based hydrogen in steel production, developed in the H2Future[7] project. In 2021, technical capacity almost doubled in the Refhyne[8] project, which launched a 10-MW electrolyser for a refinery, with plans to create a 100-MW plant. Even greater capacity is foreseen in project Djewels, which is demonstrating a 20-MW a novel, high performance alkaline electrolyser to help green the production of methanol in Delfzijl, the Netherlands

High-temperature electrolysis that increases hydrogen production efficiency is another emerging success. The GrinHy[9] project has developed a 150-kW steam electrolyser for a steel refinery in Germany, while in the Netherlands, the MultiPLHY[10] project is developing a megawatt-scale high-temperature electrolyser for a biorefinery.

These innovations make a strong case for industry investment in hydrogen technology to achieve carbon goals and to have the security of locally produced inputs. At the same time, European innovations are making fuel-cell technologies more affordable for consumers, allowing hydrogen industries to build a position of strength in the global marketplace.

Systems that heat homes and power businesses are becoming cheaper to produce thanks to projects such as NELLHI[11] and qSOFC[12]. These have improved components and factory processes to bring manufacturing costs down to a competitive €1 000/kW for small 0.5-1.5-kW systems.

A larger 60-kW system developed from other projects, including INNO-SOFC[13] and ComSos[14], is now preparing the technology for larger commercial consumers. This new version, which costs less to build than existing models, has a fully European supply chain and can demonstrate a solid business argument for adoption.

EU-funded solutions also reduce urban pollution and support remote areas. Hydrogen buses and cars are already transporting people between homes, work and commercial centres around Europe, with a growing refuelling network. Policies to extend infrastructure and improve production efficiencies will only increase uptake.

Meanwhile portable, quiet, low-emission generators developed by the EVERYWH2ERE[15] and ALKAMMONIA[16] projects use EU-made components. The technology can be used for building sites and events, for example, and help improve rural access to energy.

In the skies, hydrogen-powered aircraft are on the horizon, addressing the needs of one of highest-profile producers of greenhouse gases. EU-funded innovations include liquid hydrogen tanks and a high-power fuel cell for small hydrogen aircraft from the HEAVEN[17] project and a back-up power system from the FLHYSAFE[18] project. Both are important steps towards commercial, low-emission hydrogen aircraft.

Integrated approach

We already have a glimpse of what a hydrogen economy could look like in the world's first integrated demonstration of clean-hydrogen economies, known as hydrogen valleys. Europe has been the first region to show how an integrated hydrogen economy could work. Its hydrogen valleys combine projects for clean-hydrogen production, storage, distribution and applications in a real-world setting as a means to select and drive forward the most viable technologies.

The HEAVENN[19] hydrogen valley in the northern Netherlands led the way in this approach. Founded through the FCH JU with a budget of €90 million, it combines two electrolysers powered by the region's abundant offshore wind to produce hydrogen for industries, public transport, homes and underground storage, all using innovative technologies.

Other areas such as the island of Mallorca and the region between Italy, Slovenia and Croatia, are adopting similar models as steps towards an EU-wide hydrogen economy.

Europe is promoting more hydrogen valleys worldwide through the H2V platform[20], set up in 2020 by the FCH JU and Mission Innovation, a coalition of countries aiming to establish 100 hydrogen valleys by 2030. Members are sharing information to accelerate the process. Currently, there are 36 hydrogen valleys in 20 countries, with the majority in the EU.

Public-private success story

Much of the credit for this impressive development of hydrogen technology in Europe is due to powerful cooperation between policy-makers, research and industry. In the decade of the FCH JU's existence, the public-private partnership invested over €1 billion in 287 research and demonstration projects.

The FCH JU ceased operations on 29 November 2021. The joint undertaking has funded 287 projects under the previous programmes FP7 and H2020, many led by small companies. Its successor, the Clean Hydrogen Partnership was established on 30 November 2021 to take over its legacy portfolio and to continue developing the European value chain for safe and clean hydrogen technologies.

This new joint undertaking brings together the European Commission, industries in Hydrogen Europe and researchers in Hydrogen Research to bring advanced clean hydrogen applications closer to readiness for markets.

The EU is providing €1 billion in research and innovation funding to the Clean Hydrogen Partnership, matched by €1 billion from industry. Through its recently launched first call for proposals, the Clean Hydrogen Partnership will provide €300 million to support projects that boost renewable hydrogen production, reduce its costs, develop its storage and distribution solutions, and stimulate the use of low carbon hydrogen in hard to abate sectors, such as energy intensive industries, aviation or heavy duty transport.

Continued development of hydrogen innovation and industry in Europe is essential. Competitors in the USA, China, Korea and Japan are close on our heels. As hydrogen technology matures and pressure to decarbonise increases, it is time to move to large-scale deployment for independent energy supplies and value chains that can resist global shocks.

This year, the Clean Hydrogen Partnership offers a catalyst to expand Europe's innovation capacity. It is launching the biggest hydrogen research call in the history of Europe – €300 million will be made available for proposed projects in an unprecedented drive to support the creation of cutting-edge hydrogen technologies.

Funds will stimulate research into new technologies, bring innovations closer to consumers and spread knowledge and skills to allow Europe to maintain its lead in this sector. The investment is essential to ensure a healthy hydrogen economy of diverse innovators, manufacturers, producers and end-users across the EU for a sustainable and prosperous hydrogen-based future.

For more information: Clean Hydrogen Partnership

7 https://h2future-project.eu/

8 https://refhyne.eu/

9 https://www.green-industrial-hydrogen.com/project/grinhy-project

10 https://multiplhy-project.eu/

11 http://www.nellhi.eu/sofc

12 http://www.qsofc.eu/

13 http://www.innosofc.eu/

14 https://www.comsos.eu/

15 https://www.everywh2ere.eu/

16 https://cordis.europa.eu/project/id/325343

17 https://heaven-fch-project.eu/

18 https://www.flhysafe.eu/

19 https://heavenn.org/

20 https://www.h2v.eu/

Uranium conversion and enrichment activities: a highly strategic area for the European Union

JACQUES PEYTHIEU

Orano Conversion & Enrichment CEO

The European Union (EU) is simultaneously pursuing two objectives: the decarbonisation of its economy and the strengthening of its strategic autonomy to increase the resilience of its supplies and value chains. Uninterrupted, reliable and competitive access to low-carbon electricity will play a highly strategic role in these twin ambitions. A contribution of the European nuclear industry remains essential for this purpose. For the EU, having a domestic supply chain of the nuclear fuel cycle, in particular those related to uranium conversion and enrichment, is a key strategic interest.

Nuclear power plays an important part in the EU's goals of decarbonisation and industrial resilience

Nuclear power today accounts for almost 25% of the EU's electricity production, or approximately about half of its low-carbon component. However, the decarbonisation of the European economy implies a significant increase in electricity consumption by 2050 (between +35% and 150% compared to 2018 depending on the sources[1]). This massive electrification process will require secure, reliable and competitive low-carbon supply to ensure its resilience.

The recent sharp rise in electricity prices, mostly due to volatile gas prices, has reminded public opinion that the EU remains vulnerable to energy imports. By 2050, Europe's electricity mix will need to become less dependent on imported fossil fuels in order to increase its decarbonisation while strengthening energy sovereignty. The European Commission acknowledges that nuclear power will be part of the EU's future decarbonised electricity mix, alongside renewable energies.

All technologies of the nuclear fuel cycle - mining technologies, uranium transformation, reactors, fuel, back-end solutions - are mastered in Europe. Therefore, strengthening the European nuclear industry will enable the European Union to better cope with international contingencies. Furthermore, recent substantial investment of the European nuclear industry in modern, safe and adaptable facilities have given the EU a technological leadership that is both rooted in its territory and open to the world.

Uranium conversion and enrichment facilities are strategic issues in the nuclear value chain

After the extraction of uranium, its conversion and enrichment are key steps in providing suitable fuel for current and future nuclear power plants. As such, these two activities require special attention due to their strategic nature for the security of supply of the EU and, ultimately, its energy independence and security.

The enriched uranium produced by Orano supplies low-carbon energy to nearly 90 million households each year, the equivalent of France, Germany and the UK combined. Orano's conversion capacity supplies nearly 180 million households, the equivalent of 80% of the EU + UK. These figures illustrate how important our industrial sites are in order to achieve the goals of low-carbon electricity production in Europe, as well as their strategic interest for the EU security of supply.

> "The decision of some of our competitors (Russia and China) to close their domestic conversion and enrichment markets to foreign players illustrates the highly strategic nature of the nuclear front end."

Import limitation measures have been put in place in some countries, such as the United States, where quotas on the maximum volume of Russian enriched uranium were set at 20% of the US market between 2011 and 2020, and currently at 13% from 2021 to 2040. These limitations are meant to protect the domestic industry, which is reduced to one enrichment plant. Meanwhile, the EU and its four enrichment facilities remain open to foreign competition[2].

Under the authority of the European Commission, the Euratom Supply Agency (ESA) is responsible for the implementation of a common policy for the supply of uranium ore and nuclear materials[3]. ESA has created a market observatory to provide a forward-looking view of flows. The Agency also validates supply contracts through a co-signature process. In October 2020, it launched a working group on High-Assay Low-Enriched Uranium (HALEU), a type of fuel required for certain types of advanced reactors, in order to explore commercial and industrial options for

1 In the European Commission's long-term strategy, the EU's final energy consumption decreases from 1,639 Mtoe in 2016 to 1,200 Mtoe in 2050, but all scenarios predict an increase in electricity consumption.

2 30% of the European market is held by the Russian company Tenex/TVEL

3 Article 52 of the Euratom Treaty

the development of a European production capacity.

In its latest annual report in 2020, ESA stresses the importance of diversifying sources of supply in the nuclear fuel cycle. While 95% of the natural uranium in European facilities comes from six different countries and the EU demand for uranium is expected to fall by 12% over the next ten years, the Agency is concerned about the dependence of some European operators on a single foreign supplier for fuel fabrication. Generally speaking, ESA considers that security of supply is guaranteed when two alternative suppliers exist at each stage of the nuclear fuel cycle value chain.

Unfortunately, the ESA's principles are not always enforced in practice. Awareness of the strategic importance of conversion and enrichment activities for the European Union may therefore need to be increased in order to place European players and their foreign competitors on an equal footing on EU territory.

Orano, a major player in the nuclear fuel cycle, committed to promote the EU's energy independence and security

Orano invested massively -more than 5 billion euros over the last 10 years – to renew its industrial conversion and enrichment facilities (respectively the Philippe Coste plant, inaugurated in 2018, and the Georges Besse II plant inaugurated in 2010). These new plants secure a European footprint for conversion and enrichment for the next forty years. They enable us to offer our customers the most efficient industrial installations in the world, in compliance with the most demanding safety standards, while limiting the environmental footprint of these facilities.

Orano is the worldwide leader in natural uranium conversion with 25% of the installed capacity. Philippe Coste conversion which was commissioned end of 2018 is performing in its ramp-up program, which will lead to a total production capacity around 15,000 tU per year by 2023 to supply Urenco and Orano enrichment facilities.

Orano is also committed to developing new activities such as the production of non-nuclear stable isotopes. The expertise acquired for nearly 60 years in the transformation, conversion and enrichment of uranium will enable the opening of a stable isotopes laboratory by 2023 and increase European sovereignty in this domain. These isotopes are used in various applications in the medical field (diagnosis and treatment of cancers), in the industrial sector (increasing the performance of lasers) and in the field of fundamental research (quantum computing).

"In order to consolidate these unique European competences in the long term, the European Union should guarantee a level playing field in the international market to its own nuclear industry."

This is of strategic interest for the European energy market and, therefore, for the European Union as a whole.

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Aerial view of enrichment facility Georges Besse II on the Tricastin nuclear site

How to **decarbonise** and **regionalise lithium** production in Europe

VINCENT LEDOUX PEDAILLES

Vice President – Business Development, Vulcan Energy

A key conclusion that can be drawn from recent world events including COVID-19, COP26, or indeed Russia's invasion of Ukraine, is that the EU needs to develop more resilient and independent supply chains for critical commodities from energy, pharmaceuticals, to microchips and battery metals.

Sovereign supply chains mostly involve building a local manufacturing industry, but this also needs to be done in a sustainable way and in line with CO_2 emission targets. Lithium is a prime example of a critical material that Europe desperately needs, that should be produced locally and sustainably.

Lithium is a key and irreplaceable component in lithium-ion batteries which are then used in electric vehicles (EV) and renewable energy storage. It is a cornerstone resource of our efforts to mitigate climate change.

The lithium sector is undergoing tremendous growth. Global demand for the battery metal is expected to exceed six times its current size before 2030, mostly supported by the development of electric mobility. In Europe alone, it is estimated that we will consume around one million tons of lithium chemicals per year by 2030, a threefold increase on today's global market. Lithium will be used in giga factories that are being or will be built across the continent, supported by companies such as Volkswagen, Renault, Stellantis, Tesla. Current projections show the European market will grow to be the second largest battery market in the world, after Asia.

Recently, lithium prices have experienced extreme upward pressure, increasing by more than 600% in less than a year. This surge is mostly due to the industry's inability to increase supply fast enough to cope with the tremendous growth in the sector; and we are only at the beginning of the era of electric mobility.

Historically, lithium has mostly been extracted in Chile and Argentina, where a salty water was extracted from the ground and then stored in evaporation ponds. This is a lengthy process, consuming large quantities of water in some of the driest places on earth.

Today, lithium is extracted as a rock from open pit mines in Australia. The hard rock product is then exported to China, where it is refined into a lithium chemicals. Consequently, around 80 to 90% of the lithium used in our European EVs comes from China.

Currently, there is no lithium extraction or refining in Europe, meaning 100% of our lithium is imported. This is causing a number of concerns and complexities for European auto and battery makers, including logistical and geopolitical challenges, as well as environmental threat associated with the production of lithium itself. According to Minviro, a consulting firm based in London, specialising in Life Cycle Assessment, every ton of lithium hydroxide produced in China emits roughly 15 tons of CO_2 emissions.

This is clearly not in line with automakers' sustainability targets, nor is it consistent with what consumers are expecting when they purchase an EV. Driving a car with no exhaust emission is not enough; drivers also want to make sure the entire supply chain used for the vehicle, from when it is mined to when the rubber hits the road, is sustainable.

One logical solution to alleviate Europe's reliance on China, and the associated environmental and geopolitical risks, is to start production lithium locally.

There are several lithium projects across the region, and many will need to be successful to supply the European market, but it is unlikely that there will be enough local production.

When developing a lithium project in Europe, there are many hurdles along the way including permitting, financing, environmental impact assessments and societal acceptance. Any mining project, in particular an open pit development, will face a challenging permitting process that requires a lot of experience and time. The Serbian Government recently revoked approval for Rio Tinto's Jadar project, an open-pit lithium mine. This is one example of how difficult it can be to build open pit developments in Europe, even if they are aimed at de-risking the European supply chain by offering a critical product such as lithium, locally.

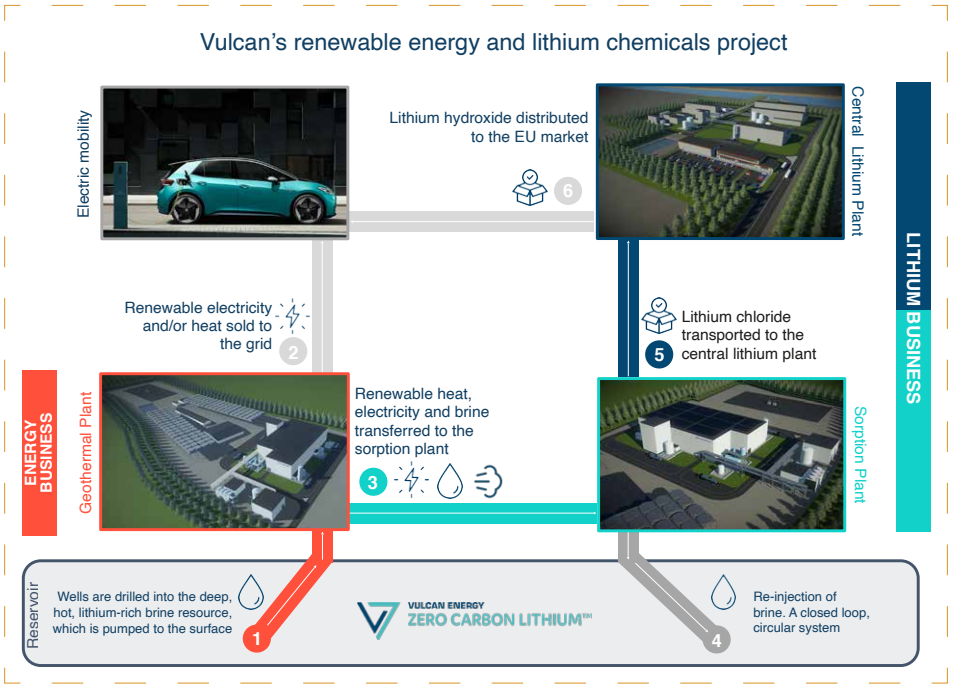
The main element that needs to be addressed is the environmental impact of mining and refining activities, as this will have a great influence on the permitting process and on the societal acceptance of the project. Other challenges include the scale of some projects, where the size of the deposit doesn't justify the construction of the refinery and requires feedstock to be imported once the deposit runs out.

Several European projects are looking at importing spodumene, a rock which contains lithium, in order to refine it into lithium chemicals. This approach is similar to non-integrated lithium converters in China. However, there is an environmental concern because converting spodumene into lithium chemicals is energy intensive and can generate high levels of pollution. Further, the EU based converters would be importing spodumene containing 94% waste from overseas and the companies would then have

to dispose of this unusable by-product on the European continent.

One European lithium project has been purposefully designed to alleviate these multiple issues. Vulcan Energy Resources is a German/Australian company aiming to become the world's first integrated lithium and renewable energy producer with a net zero carbon footprint. Vulcan's unique Zero Carbon Lithium™ Project aims to produce both renewable geothermal energy and lithium hydroxide for EVs, from the same deep brine source in the Upper Rhine Valley, Germany.

The company has secured access to the largest lithium resource in Europe. The resources which have been identified from just two of Vulcan's eight licenses, spread across more than 1,000 square kilometres. There is therefore significant potential to increase the size of the resource and offer more sustainable lithium to the European market.



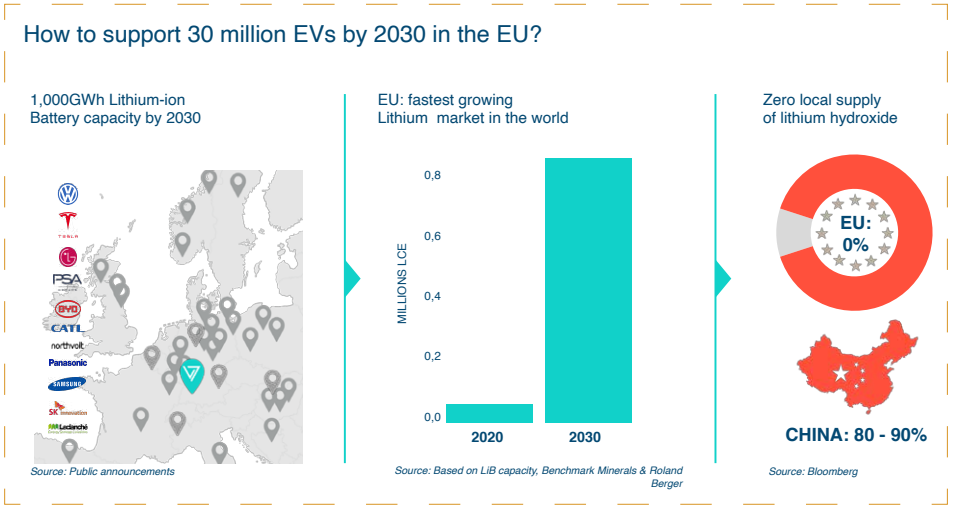
Lithium is found in the Upper Rhine Graben, dissolved in thermal water in underground reservoirs. Proprietary technology developed by Vulcan allows the lithium to be filtered from this thermal water, also known as brine, which has been pumped to the surface. Special sorbents are used to attract and extract the lithium ions from the brine. After the lithium is removed, the thermal water is returned to the natural reservoir in a closed loop system.

Extracting the lithium from the thermal water requires energy. Vulcan will use the energy from the heat of the thermal water, which can produce electricity and heat. The electricity can be used to power the pumps and other electricity needs of the geothermal system and lithium extraction, with excess energy sold to the grid. This makes lithium extraction climate-neutral, as no CO_2 is emitted. Importantly, the process also consumes very little water and chemicals, generates a small amount of waste and will have a very small land footprint comparative to other lithium or renewable energy projects.

Vulcan's Zero Carbon LithiumÔ Project started in 2018 and has rapidly advanced over a short period of time. The company, dual listed on the Australian and Frankfurt stock exchanges, has a market capitalisation of more than US$1Billion and has raised more than A$320M last year to finance the development of the project. Vulcan has also signed long term, binding lithium supply agreements with five key players including Volkswagen, Renault Group, Stellantis, Umicore and LG Energy Solution. Currently, Vulcan is the only project in Europe with signed, long term supply contracts with European auto and battery markers and the only lithium project globally to have fully allocated its first 5 years of productions to non-Chinese tier one offtakers.

The company is currently operating a pilot plant for its lithium extraction process which is connected directly to a local geothermal plant. In late 2021, Vulcan acquired an existing geothermal operation and, since the beginning of the year, has been selling renewable energy to the German grid. A large demonstration plant will start operation in 2022, which is the last technical step before commercial construction and operation.

Vulcan is targeting phase one production in 2024, and will ramp up to produce enough output to supply more than one million electric vehicles per year. Following a significant capital investment to build the asset, the company hopes to expand and offer additional renewable energy and lithium to the European market, and work with the industry to de-risk and decarbonise the supply chain.



The **circular economy** as a **tool** for **European strategic autonomy**

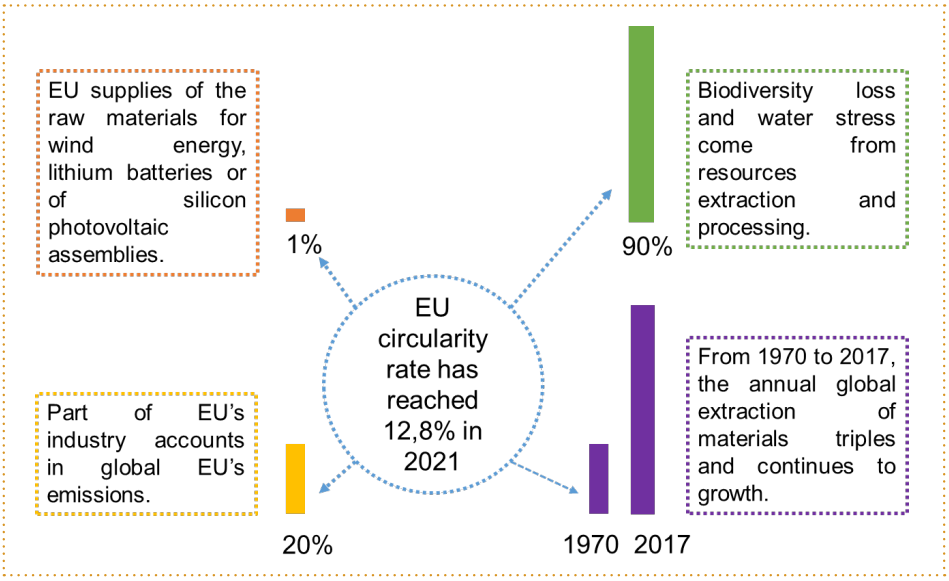
JEAN HORNAIN
CEO of CITEO

In its new report, Circle Economy finds that the circular economy is only 8.6% for all products in 2021. By linking the circular economy to climate change, the report demonstrates that the rate of circularity needs to be doubled if we wish to meet our climate objectives. While the rate is slightly higher in Europe, 12.8% according to Eurostat, the lack of circularity inevitably leads to a dependence on raw materials, especially for 137 products used in 14 industrial sectors (e.g., electronics, aerospace, energy-intensive industries or automotive). Their extraction and use in order to meet increasing global needs results in environmental destruction and global warming.

If the European Union is to deepen its internal market, which is the backbone of its economy, and achieve its climate goals, it must develop a more dynamic and resilient supply of raw materials. The pandemic and geopolitical instabilities have intensified the debate on strengthening the Union's strategic autonomy, which has been widely supported by Thierry Breton and the European Parliament. They must now also build on the benefits of the circular economy.

For Citeo, the French company in charge of the Extended Producer Responsibility for household packaging and graphic papers, European strategic autonomy must reconcile economic issues with ecological benefits by relying on a circular economy that reduces our dependence on countries outside the European Union and by strengthening our resilience. To achieve this, Citeo believes that European efforts should be accelerated by:

- Integrating eco-design issues at the core of company strategies, promoting innovation and investment to develop new recycling channels.
- Developing economic tools to accelerate material competitiveness and sustainability.
- Establishing complementary measures to ensure the resilience of the European market and for the benefit of countries outside the European Union, in particular about the Global Alliance on the Circular Economy and Resource Efficiency (GACERE).



Sources: Eurostat, Global Resources Outlook 2019, EU Action Climate Progress Report 2019

Ecodesign for the sustainability of materials

Market resilience is based on systematically integrating environmental issues into the design and development of products and reducing negative environmental impacts throughout their life cycle. With this in mind, Citeo supports the European Commission's forthcoming Sustainable Products Initiative to ensure that eco-design is at the heart of companies' ambitions when marketing fully reusable, repairable and recyclable products and packaging in the internal market.

Eco-design, a factor in the sustainability of materials, will be promoted thanks to eco-modulation, a system implemented by Citeo since 2011. For example, one of the bonuses associated with reducing both the weight of materials and the amount of packaging with the 8% bonus. The other Extended Producer Responsibility channels are taking advantage of it in order to encourage marketers to improve the design of the packaging. In order to serve European strategic autonomy, this incentive must therefore be based on common principles designed to meet the challenges of reduction, reuse and recycling.

Businesses should take into account their environmental impacts and help build more resilient and sustainable supply chains within the internal market. This environmental responsibility must be, through eco-design, at the core of the business strategy to ensure sustainable production and strengthen the strategic autonomy of the Union.

The development of economic tools to accelerate material competitiveness

About 60 billion tonnes of renewable and non-renewable resources are extracted worldwide every year, an increase of almost 100% since 1980 (to meet energy supply, consumption, agriculture, etc.). Since the 1950s, the global plastics production has tremendously increased, leading to the development of a highly competitive raw materials market. However, the European Commission, with the Single-Use Plastics Directive and the forthcoming revision of the Packaging and Packaging Waste Directive; and many Member States are considering setting targets for recycled plastics in their products, thus creating an urgent need for a more competitive secondary raw material market. This market needs to be supported alongside the implementation of the European Multi-annual Financial Framework's contribution for non-recycled plastic packaging waste to encourage the Member States to make the transition to a circular economy.

It must also be possible to boost material competitiveness through investment. This is the objective of the forthcoming taxonomy regulation, which, by classifying economies as "green", will de facto direct investments towards activities needed for the transition from a linear to a circular economy. For this reason, Citeo welcomed this European initiative and hopes that activities related to eco-design, the development of re-use and molecular recycling, and the fight against litter can be recognised as "green." This taxonomy must favour the "recyclable", which will make it possible to encourage the emergence of European industrial sectors and provide a clear response to citizens' sorting habits.

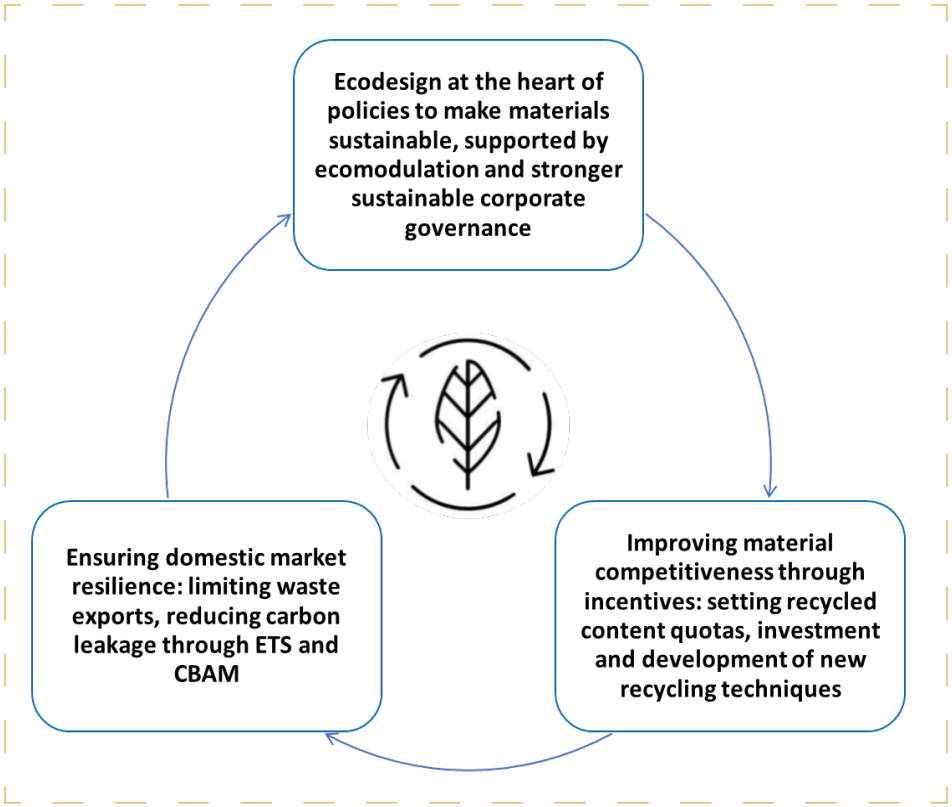
In fact, the growing demand for recycled plastic depends on the development of new recycling channels. Therefore, molecular recycling seems to be a solution to overcome the limitations of mechanical recycling. Companies have already seized the opportunity thanks to several promising projects that have been launched in Europe, particularly in the Netherlands but also and above all in France, with several projects, including two highlighted by the "Choose France" programme. The European Union must be at the forefront of these issues by supporting the development of new recycling solutions while balancing the environmental and industrial challenges.

The need for additional measures to ensure the resilience of the internal market

Building a resilient internal market also requires limiting negative environmental externalities such as exports of waste to countries that do not have recycling technologies similar to those in the EU. In this sense, the review of the Waste Shipment Regulation would give concrete expression to the objectives of restricting exports and boosting the European market.

This also helps to combat carbon leakage and to contribute to achieving the European Union's 2050 carbon neutrality objectives. Thus, as early as 2005, the European Union adopted an emissions trading scheme (ETS) which allows companies to buy or sell "rights to emit". So as to fully respect the waste hierarchy, while taking into account local specificities (e.g. overseas territories), waste incineration should be included in the ETS review.

Lastly, the carbon adjustment mechanism at the borders (CBAM) project, which defines an acceptable GHG emission threshold on all goods imported into the EU (currently the iron and steel, cement, fertiliser, aluminium and power generation sectors are concerned), will promote competitiveness by limiting relocation to countries with lower environmental standards and mitigating the competitive imbalance to which companies are subject. Citeo supports the integration of polymers, glass and paper into this mechanism. This will strengthen the European recycling market and will support a similar level of price competitiveness between products whose source is recycled and products from virgin raw materials.



Lots of **policy** is still needed to **secure investments** in **Europe's green energy supply**

MORTEN HELVEG PETERSEN

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

European energy independence relies on massive investments, and investors are certainly around. What they need is predictable market circumstances through regulatory frameworks, and truth be told, we are somewhat behind schedule.

Few, if any, policies I have negotiated as a Member of the European Parliament are as important as the Energy Union. Finally adopted by the Council in 2016, the Energy Union is not only a precondition for the EU Green Deal and our climate targets. From the beginning, the Energy Union was also about European security politics, and today, more than ever, it is apparent why dependence on energy import is problematic. In particular, if you are dependent on someone like Russia's President Putin, who does not hesitate to use energy supplies as political leverage, way beyond the point of simple commercial trade. European self-supply of energy may be one of the single-most important pieces in the European pie of strategic autonomy, but in all honesty, we are a fair distance away of achieving this still.

It is quite the exercise too, since converting an entire continent's energy supply from fossil fuels to sustainable, alternative energy sources is without prehistory. Yet, my experience is that funding for renewable energy projects is quite readily available, sometimes to a surprising extent. After all, the green transition is still young and, in many ways immature, and consequently it is still very much a 'Wild West' market for investors.

Take, for instance, the taxonomy instrument for classification of sustainable energy activities. Right now, the taxonomy is at the centre of a highly polarised debate, where the tipping point between what is "green" and what is "black" is very difficult to pin down. Climate footprint reporting for companies is another area, where politics is still inconclusive, and therefore leaves green investments in the wind.

Predictability and stability are key words for investors in the green transition. It is important that we as politicians put an effort into creating transparent and stable policies that investors can rely on. Likewise, it is critical for the trust of investors that political goals, for example renewable energy targets, do not crumble and fall along the way.

The same kind of logic applies to red tape issues. Recently, I have been the rapporteur on the EU strategy on offshore renewables, and a major obstacle in the deployment of offshore windmills is very slow permitting, a problem occurring across the continent, which threatens the fulfilment of Europe's climate targets. Investors take note of such issues too, and as politicians, we need to remove these obstacles, one by one, if necessary, in order to pave the way for more investments in the new green markets.

Making Europe energy independent with green energy is a tremendous task, because time is so scarce, and the required deployment is almost beyond imagination. However, my experience with the offshore renewable industry is that they have mature value chains, so the industry is ready, and there are investors around who are ready to fund the necessary upscaling. What they lack is updated regulatory frameworks.

Within offshore renewables this is for example, related to maritime spatial planning, while European energy independence as a whole also lacks common technical standards for the interconnectors, which makes sure the green energy can flow freely across borders. Likewise, a revision of EU electricity market regulations is need to accommodate green investors, the green transition and the climate targets in the Green Deal.

I do not experience any lack of will amongst my colleagues in politics. The issue is simply that the task is gigantic, the time available short, and between the two, of course, democratic process needs to be respected. The covid-pandemic certainly did not help the legislative work either, and as a result, the European Parliament is looking at passing 3,800 pages of Fit for 55 legislation in the reminder of the period. That might break records.

The investors are out there, and it is not that surprising. Beyond historically low interest rates, which for some times have made, say, bonds less attractive as investments objects, the green transition is simply an extraordinary growth opportunity. If the green markets are still young, they are incredibly vibrant because there is gold to be found here, for businesses who win the market shares. As a society however, we want the competition to be tough, and have as many businesses in the market as possible to advance technologies, deliver better consumer prices and reduce public investments. This is what the regulatory frameworks should accommodate by shaping predictable and stable green markets, thus paving the way for European energy independence.

The **circular economy**, a new **economic model** to strengthen **European resilience** and **autonomy**

SIRPA PIETIKÄINEN

MEP (EPP Group – Finland), Member of the ECON Committee

The global demand for resources is expected to triple by 2050, including a 70% increase in demand for food, feed and fiber. We already consume some 1.6 planets' worth of resources every single year, and according to some estimates, we would need three planets full of resources to satisfy our demand by 2050 if we continue with business as usual. There are, however, limits to growth as we only have this one planet.

Besides, the EU is the most dependent continent on imported resources: 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.

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.

European economies cannot survive unless we take some radical steps to increase our resource efficiency and move towards a truly circular economy. We have to stop wasting precious resources, keep them within the EU and start using them more efficiently. We have to create closed-loop systems, which can keep the materials within the European boundaries and in its products, which is important both for the supply of critical materials and for the environment.

We need a paradigm change, science based backcastive approach that is future-proof, up to the challenge.

When setting the targets for the future, we need to anticipate this exponential change and set our targets accordingly to halt and reverse it. By 2050, we need to increase our resource efficiency by "factor-10": learn to create the same well-being with a tenth of the resources we use now. The cost of transition risks and sunk investments will only grow from today.

The target needs to be a sustainable economy and society that works within the planetary boundaries by 2050, which means fully implementing a cascading use of resources, sustainable sourcing, sustainable land use and compensating the land use, a waste hierarchy, creating a closed-loop on non-renewable resources, using no emission renewables within the limits of their renewability, phasing out and preventing the accumulation of toxic and harmful substances and doing no harm on the biodiversity.

To achieve this we need investments and public-private partnerships. The transition to a low-carbon and circular growth model is an economic opportunity.

We also need to ensure that the public or private finances do not support sidetracked investments. It is a necessity to ensure that the money is directed to a recovery that is sustainable in the long term. No euro should be spent on unsustainable economic activity or businesses. They need to be truly on the scale of the challenge and capable of solving it. We cannot keep supporting environmentally harmful actions. Otherwise, we will be leaving to future generations both public and climate debt.

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.

The upcoming Sustainable Products Initiative and the revision of the Ecodesign Directive is a great opportunity to tackle these challenges. We need to set the ambition level right and it should be based on science and backcasting. This would mean at least 10-fold resource efficiency. We need to set up binding targets, based on harmonized indicators. To achieve this change the focus needs to shift from recycling to "designing out waste" so that the products and packaging placed on the EU market are always upgradable, reusable, repairable and recyclable. This could be done by broadening the scope of the Ecodesign directive.

The message is clear: Spend money wisely, phase out fossil fuel and other environmentally harmful subsidies.

Industrial decarbonisation & strategic autonomy work together

ALEXANDRE **SAUBOT**

President, France Industrie

"Strategic autonomy" has finally become a guideline of EU politics. It is certainly late in coming with but at a decisive moment. Commissioner Thierry Breton has played a key role in achieving it and, in parallel, **industry** will also play a key role in order to achieve **carbon neutrality by 2050**.

For example, since 1990, industrial emissions in France have dropped by almost 50%. French industry has achieved this through its **efforts to modernize, improve energy efficiency and enhance production processes**...but also because of **deindustrialisation**. Yet, **our footprint continues to grow.** This is due to the **increase in imports of more carbon-intensive products from countries** that have not implemented a climate policy as demanding as ours. This situation is both harmful for the economy and employment in France, but also harmful for the climate since imported products cause more CO_2 emissions than the production of these same products in France.

This example shows that **strengthening strategic autonomy and decarbonising industrial processes, often discussed separately, are in fact two sides of the same coin.**

Indeed, **decarbonisation of industry is a pillar of our strategic autonomy and, at the same time, strategic autonomy includes inherently the levers for the decarbonisation of industry.**

Decarbonisation of industry is a pillar of our strategic autonomy

We believe that it is through the **decarbonisation of industrial processes,** together with energy efficiency measures in *i.a.* buildings and modes of transport, that we will succeed in reducing our overall carbon emissions. **People are not ready for degrowth**, to reduce their consumption of goods. The need for manufactured goods will continue to increase as the population grows and the quality of life improves. So our objective is to **understand how, with increasing demand, we can produce more carbon-free products**.

The **fight against carbon emissions is not limited to our territory, but is global**. So the issue is not who produces carbon, but rather how much carbon is produced globally. In the end, it is the question of the **carbon footprint of products** that counts, and consequently the decarbonisation of industrial manufacturing processes. **Producing in the EU, and even more in France, means producing according to some of the highest environmental standards in the world,** and with an energy mix that is much less carbon intensive than elsewhere.

In France, **nuclear power** has largely contributed to decarbonisation efforts. This energy source has also entered the taxonomy. At a time of international crisis, it is once again a potential source of strategic autonomy. **France has made a strategic choice that is once more proving its effectiveness**.

Thus, consolidating the EU's industrial base is essential to all efforts to reduce our carbon footprint. In other words, we **need a strong industry and strategic autonomy to meet the challenge of the transition to a low-carbon world**. In addition, it avoids the CO_2 emissions generated by the international transport of imported goods.

Strategic autonomy inherently includes the levers for decarbonising industry

Strengthening our strategic autonomy literally means **reducing our dependences in global value chains**. This means reducing our dependence on **raw materials and strategic metals for the energy transition**, but also on **technologically advanced products**, as well as, in the specific case of France, **reducing our trade balance gap**. However, industry allows us to win the battle for technological and climate leadership: by producing locally, we master the processes of key technologies, while reducing our carbon footprint.

These combined efforts should also allow Europe to **inspire standards** at the global level. **The response to the climate crisis will be global, or it will not be**. By proposing environmental and decarbonised standards at the global level that are based on European industrial processes, European products will become the reference.

Let's not forget either that industry is a **vector of social and territorial cohesion**, because it is industry that determines the **productivity gains** that are the primary cause of prosperity (it ensures 50% in France for example). Ensuring growth is one of the objectives of strategic autonomy, and could facilitate the **social acceptability of the energy transition** : manufacturing in Europe has indeed a cost as low-carbon products are more expensive to manufacture.

Manufacturing industry, keystone of decarbonisation & strategic autonomy

In conclusion, decarbonisation of industry and strategic autonomy are key tools for the future and growth of the European Union. And **manufacturing is the keystone of this equation**.

Strategic autonomy must, for example, serve the fight against carbon leakage. But we must match our political ambitions of Green Deal & strategic autonomy with industrial competitiveness**, otherwise decarbonisation will be synonym of deindustrialization and all the efforts to strengthen our strategic autonomy will be in vain.**

This is why we are convinced **that reinforcing strategic autonomy must involve achievable, fact-based decarbonisation efforts**. This should feed the current discussions around the Green Deal legislative proposals, as well as the European taxonomy. The industry is concerned of some orientations in the European Parliament and the Council not going in that direction.

As a matter of facts: the **competitiveness of decarbonising EU industry must then become the compass for policy choices on energy transition, as much as it is for the same choices on strategic autonomy**.

Extraordinary times call for... ordinary measures?

FRANÇOIS-RÉGIS MOUTON DE LOSTALOT-LASSALLE

IOGP, Regional Director Europe

The on-going Russian invasion of Ukraine has shaken the foundations of the European security architecture. It constitutes a geopolitical gamechanger the real magnitude of which we still cannot comprehend as the exit of this unpreceded crisis remains largely unpredictable.

Parallel to diplomatic efforts and military and humanitarian assistance to the Ukrainian people, the crisis has brought to light numerous sectoral interdependencies: from an energy perspective, it is the EU's reliance on Russia for over 40% of its gas supplies which has come under the spotlight, just as Europe's own demand soared as its economy recovered from the Covid-19 pandemic and found itself competing for resources on the global market.

As European leaders seek ways to adapt to the new geopolitical reality and plan for the future, they have found themselves reconsidering the use of certain energy sources which until very recently had become unpopular. The recent Versailles declaration proves the European solidarity and its determination to chart a long-term pathway to improve Europe's Strategic Autonomy and resilience.

In such extraordinary times, Europe seems to be betting on ordinary but pragmatic measures.

European Commission Executive Vice-President Frans Timmermans recently announced there could be 'no taboos in this situation', and signalled that EU Member States should be allowed to continue burning coal as long as needed. In Germany, Economic Affairs and Climate Action Minister Robert Habeck hinted at a possible U-turn of his country's stance on nuclear energy. Who would have believed this to be possible a few months ago?

As for oil & gas, the question on everyone's mind today is: how can we source them without compromising the EU's Strategic Autonomy or climate neutrality objective?

Interestingly enough, while EU leaders committed in Versailles to a basket of measures including coordinated channelling of investments in energy systems, enhancing connectivity with our immediate neighbourhood, and the diversification of energy supplies, there is one low-hanging fruit EU leaders have been more reluctant to promote: giving Europe's domestic oil & gas production a boost.

Today, the combined production of the EU27 + UK + Norway covers around 40% of the EU's gas needs. In addition to the strategic importance and the substantial government revenues and industrial activity they generate, European oil & gas companies are also subject to world-class environmental and GHG emission reduction legislation which results in an environmental footprint 30% lower than imports on average.

With the right political signal and flexible investment framework, Europe can make sure this production continues, in support of both security of supply and climate objectives.

The revenues from this activity supports European oil & gas companies in the development of innovative energy solutions and services to help the EU on its way to climate neutrality. Aside from supplying cleaner energy and large-scale industrial emission

reduction solutions such as Carbon Capture & Storage and low-carbon hydrogen, the oil & gas industry works restlessly to reduce its own operational emissions, including through the reduction of methane emissions.

Gas is also a European integration success story. Our policymakers can be proud of the EU internal energy market they have built. The resilience and responsiveness it demonstrated this winter once again showed why it is seen by many around the world as a model to follow.

But we must also recognize that the EU energy & climate discussions of the past few years have fallen victim to wishful thinking. By downplaying the current and future role of gas, discouraging or banning exploration & production, and going all-in on a few technologies in the race towards climate neutrality, Europe has forgotten its market fundamentals in the process: in 2022, oil & gas still account for a whopping 56% of the EU's overall energy mix.

Until that changes, we cannot afford to relegate the issue of security of supply and domestic production at the bottom of the priority list. As the market reminded us in late 2021, what happens in 2050 climate neutrality scenarios and short-term reality are two very different things, on two different tempos.

While the Commission's REPowerEU Joint Action Plan and the Versailles declaration rightly mentions the need to diversify EU gas supplies, the lack of an explicit push to boost domestic oil & gas production in Europe is concerning and, frankly, hard to explain.

Just a few weeks ago, as we entered 2022 and the global economy came out of a 2-year pandemic roaring, gas use across Europe hit record levels as alternative power generation capacities were either insufficient or unavailable. The balancing and transitional role of gas had become clear to all, and the European Commission proposed to enshrine it in the EU Taxonomy.

Now, as the war in Ukraine rages and emotions run high, many see in the EU's decision to cut reliance on Russian gas a golden opportunity to get rid of gas altogether, and once again refocus policy support – and therefore risk – on a small set of solutions in the name of Strategic Autonomy. Not only would this jeopardize the resilience of the EU's energy system, it could also lead to new long-term dependencies on raw materials and technologies, and therefore create new vulnerabilities for the future.

Europe is not cornered when it comes to gas.

It has a broad range of possibilities from the North Sea to the Eastern Mediterranean and Black Sea.

First, we can and must consume gas and energy overall in a smarter way. European businesses have the skills and manufacturing capacity to develop and deliver the full range of technological solutions to do so, from smart thermostats and boilers to LNG ship engines.

Secondly, the EU needs to boost its own production of natural, low-carbon and renewable gases. The European gas industry is one of the most skilled, innovative, and environmentally responsible in the world. The legislative proposals tabled by the European Commission over the past few months offer an important opportunity to strengthen security of gas supply while decarbonizing our gas system.

Finally, the EU can count on its long-time and emerging neighbouring suppliers from the Maghreb to the Eastern Mediterranean and Central Asia. As for EU LNG plants, they open endless import possibilities and can be fully exploited with minor improvements to the grid.

Most importantly, technologies to decarbonize gas itself exists in Europe, dismissing risks of a lock-in and enabling the large-scale production of low-carbon hydrogen for our strategic industrial players. By giving its Member States optionality and incentivizing the production of all EU domestic energy sources, the EU can build real resilience.

Strategic Autonomy means having the freedom to make our own choices. These choices should be courageous and clear-sighted, like those made by the Founding Fathers of the European integration.

Since the Schuman Declaration, energy has been at the heart of this integration. 70 years later, it provides us once again with the opportunity to come together as Europeans, and determine our future.

Governing data: the ultimate frontier towards Europe's **digital transformation**

PILAR DEL CASTILLO

MEP (EPP Group - Spain),
Chair of the European Internet Forum,
Member of the ITRE Committee

"*Scientia potentia est*". A Latin aphorism that was written for the first time in the 1668 Latin version of Thomas Hobbes's Leviathan, but that reflects a lesson as old as humanity.

Today, at the brink of the Digital transformation, this aphorism is as valid as ever, with one important caveat, never before in human history has there been so much data available and consequently potential knowledge.

The uniqueness of data is that many actors can use it as many times as they wish and for as many purposes as possible without any loss in quality or quantity. This feature allows us to compare data with an infrastructure that contributes to greater economic growth and, in general, to a greater well-being of society.

Another very important feature of data is that its value grows exponentially every time it is shared. According to a study published by the MIT Sloan Management Review, the greater the degree of data exchange of companies with customers, suppliers, and even competitors, the greater the innovation.

However, it's not just about sharing data, it's about doing it in a new way. Today companies are still reluctant to share because doing so comes with additional cost and risk. Especially when the nature of the data is sensitive (for example , company intellectual property, personal health, financial information). In short, although the volume of data increases exponentially day by day, its reuse is hampered by lack of trust.

In this situation, where is the European Union?

The European Institutions are well aware that today data is a key pillar of the European digital economy and data collaboration within and across Europe's industries, public administrations and consumers will be key to future innovation and economic growth.

To overcome that data re-use is hampered by low trust in data-sharing, conflicting economic incentives and technological obstacles, one of the first measures announced in the European strategy for data, was the Data Governance Act. Adopted on the 30th of November 2021, its objective: to facilitate voluntary data sharing across the EU and between sectors by strengthening mechanisms that increase data availability and foster trust through one of the main novelties of the proposal; "data intermediaries".

The regulation formalises the role of data intermediation service providers, a market that is still emerging in the EU, with the notable exceptions of Denmark and Finland, where these services are already advanced. The goal is to set clear rules for intermediaries, which will help to create fair and interoperable markets where players of all sizes have a chance to flourish.

The fundamental principle is that these service providers must remain neutral with respect to the data exchanged between holders and users. To avoid a conflict of interest, there must be a functional separation between the brokerage service and any other service provided by the broker.

In addition, the regulation introduces and promotes the notion of "data altruism": facilitating the creation of mechanisms that encourage the donation of data for objectives of general interest, provided that consent is given.

The Regulation also establishes the Data Innovation Board, an advisory body to provide expert input on developing guidelines for European data spaces. Technical issues include the development of common standards and interoperability requirements both at European and international levels.

Needless to say that the we live in a global World and that the EU cannot go about governing data in isolation. For this reason, developing a European Data Space is a journey that we have to undertake without losing sight of our likeminded global partners. Consequently, we must move up a gear collaboration with those countries and regions that share our democratic and open market values.

Together with the Data Governance Act, the European Data Strategy will be complemented by a Data Act (when writing these lines a proposal has still not been presented by the Commission. It is expected to be published by the end of February)

The scope of the Data Act concerns the actual rights on the access to, and use of, data. The Data Act has the potential to be an absolute game changer: it can create a data-agile ecosystem that enables easy access to an almost infinite amount of high-quality industrial data and consequently boosting the sectors competitiveness and the EUs economic growth.

Clarifying rights on IoT data will be crucial for Europe's Industry. When industrial data is generated by a machine in a factory, or a farmer using a row crop tractor, who does it belong to? The manufacturer, the factory owner, the farmer? And who may use and share this data with third parties, either to monetize it or to create or use new services? All of these questions are of paramount importance for the EUs competitiveness in an era where data will mainly come from things.

Our global competitiveness, our societal wellbeing and our strategic autonomy require a trustworthy European Data Space. *Knowledge is power.*

Strengthen its industrial capabilities in the field of Critical Digital Infrastructures

ROBERTO VIOLA

Director General for DG CNNECT, European Commission

With the exception of Airbus, the EU has not been able to develop pan-European industrial projects of meaningful scale. This has changed however with the COVID crisis and with the von der Leyen Commission. The pandemic has painfully demonstrated that global supply chains are fragile, and that Europe has developed unhealthy dependencies in some areas. It turns out that globalisation and free trade are no longer risk-free.

While reinforcing Europe's strategic autonomy was already at the core of the new Industrial Strategy, the Commission has taken a number of other important steps to protect its interests. To that extent, the efforts to develop industrial capacities in the EU have been vindicated and a series of initiatives can be highlighted, from batteries to the production of vaccines and increasingly the digital economy. On 9 March 2021, we have presented a vision for Europe's digital transformation by 2030. This was followed by an update of the Industrial strategy (May 2021), accompanied by a mapping of EU's strategic dependencies, and the 'Path to the Digital Decade' Policy Programme (September 2021).

The latter translates the ambitions for the digital transformation of our society and economy into measurable objectives in the areas of digital skills, digital infrastructures, digitalisation of businesses and public services, and sets up a governance framework based on an annual cooperation mechanism with Member States to reach the 2030 Digital Decade targets. It addresses gaps and critical dependencies in EU's digital capacities by directing investments to large-scale, pan-European projects for digital infrastructures in areas such as AI, HPC, Cloud-edge, data spaces and semiconductors.

Semiconductors are the essential building blocks of digital and digitised products. From smartphones and cars to healthcare and energy, chips are central to the modern digital economy. For this reason, the shortage of chips caused by supply chain disruptions has severely impaired the industrial production across all sectors in the EU, with serious economic and societal consequences.

To tackle this challenge, the Commission has adopted last month its proposal for an EU Chips Act. The European Chips Act will ensure that the EU has the necessary tools, skills and technological capabilities to become a leader in this field. It will consist of three pillars:

- The Chips for Europe Initiative will pool resources from the Union, Member States and third countries associated with the existing Union programmes, as well as the private sector, through the enhanced "Chips Joint Undertaking" to strengthen existing research, development and innovation, to ensure the deployment of advanced semi-conductor tools, pilot lines for prototyping, and to train staff
- A new framework to ensure security of supply by attracting investments and enhanced production capacities. In addition, a Chips Fund will facilitate access to finance for start-ups to help them mature their innovations and attract investors.
- A coordination mechanism between Member States and the Commission for monitoring the supply of semiconductors, estimating demand and anticipating shortages. It will draw together common crisis assessment and coordinate actions to be taken from a new emergency toolbox.

Another strategic area where we are developing important initiatives is industrial data, cloud and edge. The goal is to develop European solutions to ensure that European industrial data can be stored and processed in the EU, in line with our safety standards. To this purpose, the multi-stakeholder European Alliance for Industrial Data, Edge and Cloud will strengthen Europe's industrial capacities and realise the objectives of establishing climate-neutral, highly resource and energy-efficient, sustainable data centres; deploying 10,000 climate-neutral highly secure edge nodes across the EU; and raising the percentage of European businesses using advanced cloud computing services to 75%. In this area, the Commission will continue supporting Member States' efforts to pool resources via an IPCEI as well.

As part of our Digital Decade objective of supporting the development of secure and sustainable digital infrastructures, we are also continuing to finance 5G networks and submarine cables to connect our continent with the rest of the world and we will soon launch a satellite constellation for internet connectivity in remote areas. We are also launching the Smart Networks and Services Joint Undertaking, to prepare and shape the 6G communications technologies and through our established EuroHPC Joint Undertaking, we will purchase some of the most powerful supercomputers in the world and make them available to all through a broadband network.

Our strategic autonomy also depends on our capacity to develop adequate policies, regulations and standards that reflect European values and are a strong example for our global counterparts. The AI Regulation, the Data Act, the Data Governance Act, the Digital Markets Act, the Digital Services Act, but also the recently adopted Declaration on European digital rights and principles and the forthcoming EU's Standardisation Strategy provide the framework of rules and principles that all actors will need to comply with if they operate on the EU market.

The EU has all it takes to shape the digital and industrial transformation the European way and compete globally. With the measures outlined above, we are on the right path.

The **EU digital** transition requires a high level of **cybersecurity** to be successful

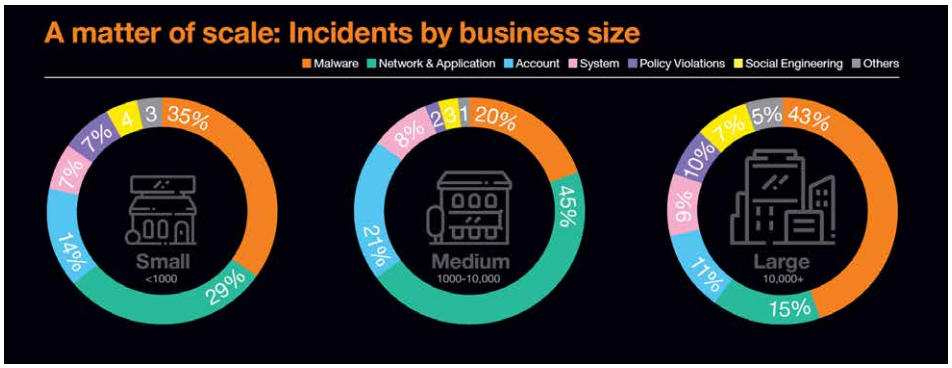
HUGUES FOULON

CEO of Orange Cyberdefense, Director of Strategy and of cybersecurity activities of the Orange Group

The European Union has set ambitious targets in terms of green and digital transitions, which requires state-of-the-art, more efficient and more energy friendly digital networks (5G, FTTH). Orange is fully engaged on this path and in supporting actively the green transition of other sectors.

But digitalising a huge part of our lives, economy and activities cannot go without ensuring trust and hence a high level of cybersecurity for the citizens and businesses across the EU. The never-ending increase of cyber-threats and attacks is a constant challenge.

As highlighted by ENISA in its Threat Landscape 2021 Report[1], "*cybersecurity attacks have continued to increase through the years 2020 and 2021, not only in terms of vectors and numbers but also in terms of their impact.*" Similarly, Orange Cyberdefense, our expert cybersecurity business unit, that provides managed security, managed threat detection and response services to organisations around the globe, revealed in its last December report Security Navigator 2022[2] the following: There has been a 13% increase in cyberattacks on companies over the past 12 months, with a strong focus on SMEs - 75% of ransomware victims being SMEs - and, for the first time, a noticeable wave of attacks targeted at mobile devices.



Source: Orange Cyberdefense Security Navigator 2022

This trend won't stop or stabilise; therefore, we need at the same pace or even faster, to develop common European tools to protect, detect, fix, and fight against cybersecurity attacks.

Over recent years, the EU has started to improve the rules and its capabilities in terms of cybersecurity (notably with its 5G toolbox, EU competence centre, draft directives on the resilience of critical entities, or network information security 2 - NIS 2). We consider that additional measures are needed quickly to reinforce the EU resilience and cybersecurity. We will focus here on three aspects: (i) strengthening the European cybersecurity ecosystem, (ii) setting up common rules governing the ICT value chain, and (iii) better monitoring of cyber rating agencies.

The European cybersecurity ecosystem needs to be strengthened

Developing a European cyber security toolbox should go hand in hand with an enhanced investment in European solutions. This includes the possibility for European actors to develop offers that will ensure compliance with European rules in terms of privacy and security, including trusted-cloud solutions, immune from extraterritorial legislation. Such cloud initiatives, currently based on existing solutions, are starting to develop e.g. the "Bleu"[3] project gathering CapGemini, Orange and Microsoft. Sovereign solutions should become a key element of the EU technological autonomy. We therefore welcome the initiatives taken at European level such as GAIA-X, the Alliance on data, cloud and edge, and the Digital Europe Programme, with its dedicated stream for cybersecurity.

Gathering and allowing European actors to cooperate is essential. On this matter, Orange Cyberdefense is one of the founding members of Campus Cyber[4] in France. It's a cybersecurity hub that will bring together the main national and international players in the field (private companies, government, training organisations, research players and associations), in order to federate the cybersecurity community and develop synergies

1 https://www.enisa.europa.eu/publications/enisa-threat-landscape-2021

2 https://www.orange.com/en/newsroom/press-releases/2021/number-cyberattacks-against-organizations-increases-13-noticeable-rise ; this is based on a detailed analysis of more than 50 billion security events analyzed daily over the past year (October 2020 to October 2021) by our 18 Security Operation Centers (SOCs) and 14 CyberSOCs across the globe

3 https://www.orange.com/en/newsroom/press-releases/2021/capgemini-and-orange-announce-plan-create-bleu-company-provide-cloud

4 https://campuscyber.fr/en/

between these players on a project by project basis. Developing a network of similar hubs present in the various EU countries could contribute to the development of a vivid European ecosystem.

In addition, increasing our cybersecurity requires relevant human skills. As highlighted by the European Commission DESI report[5], "*In key areas, such as cybersecurity or data analysis, there are constantly hundreds of thousands of vacancies*". Hiring and keeping cybersecurity experts is a true challenge, leading to the skills objective of the "Digital Decade" draft decision. While Orange contributes to the skilling and reskilling of people notably through its Cyberdefense academy[6], it's clear that a more global investment should be done by public and private entities to develop the relevant training and fill the human gap.

All main stakeholders of the ICT value chain should be governed by the same rules

Within the ICT value chain, network operators are ruled by cybersecurity provisions enshrined in the European Electronic Communications Code, and tomorrow in the NIS 2 Directive.

Operators have to implement measures in terms of security risk management and breaches' reporting that will be extended to new rules to secure the ICT value chain. While it is fair and justified in the field of cybersecurity to think globally in terms of value chain, it would also be fair to target all key actors of that value chain. In other words, it would not be proportionate to impose on network operators to secure the whole value chain while they don't design, implement, or manage some of its products and services.

That's where the current EU rules face an inherent weakness: they fail to cover some of the key products and services used by network operators, namely key software providers. This is even more problematic that electronic communications networks (5G, FTTH) will more and more rely on cloud, edge, AI and hence on software – that are often provided by non-European actors. All key actors of the ICT value chain should be ruled by the same principles and be clearly responsible for their own assets.

We therefore call the EU policy makers to urgently tackle that substantial weakness in the EU cybersecurity framework and ensure key software providers abide by the same rules as network operators.

Cyber rating activities require a common set of rules to be more transparent, robust, and legitimate

Cyber rating initiatives have been booming over the past five years and there are now several US-based agencies producing cyber ratings, such as Security ScoreCard, BitSight, RiskRecon, VisibleRisk etc. Those ratings are becoming more and more impactful as they are used by companies when considering entering into business arrangements, or by EU governments.

Supporting the Paris' call vision[7] promoting Trust and Security in Cyberspace, Orange does consider that there is a merit in developing such ratings as they can allow a better understanding of the cybersecurity level attached to our complex digitalised world. However, this makes sense only if the methodologies used are transparent, reliable, and somehow standardised. This is currently not the case.

For instance, and as highlighted by the European Telecoms Association ETNO[8], several issues or biases are noticeable for ratings done on telecom companies:

- rating agencies are performing controls without any mandate and based on what they can derive from the information on the internet – i.e. without exchanges with the rated companies;
- the technical scope used is not always relevant[9];
- the rating from several agencies can lack comparability as the attack surface can differ from one to another, etc.

Considering the growing impact of such ratings, we strongly believe there is a need to better design and control the methodologies used by the agencies in order to ensure a more accurate and fair assessment of European businesses. This is also part of our common goal to strengthen EU sovereignty. **We therefore call for policy makers to regulate such activity; it could for instance take the form of an EU cybersecurity scheme applicable to rating agencies, and/or a common set of rules applicable to them as is done in the finance sector by ESMA.**

By nature cybersecurity risks and attacks will continue to develop, and so should our European toolbox and best practices to protect, detect, neutralise, defend and dissuade. To conclude, we totally concur with Commissioner Breton[10] statement when he highlights "*our only option is to act together, at European level. In an interconnected single market, we are only as strong as the weakest link. We must therefore improve our level of security collectively.*"

5 https://digital-strategy.ec.europa.eu/en/policies/desi-integration-technology-enterprises

6 https://orangecyberdefense.com/fr/carrieres/orange-cyberdefense-academy/

7 https://www.diplomatie.gouv.fr/en/french-foreign-policy/digital-diplomacy/france-and-cyber-security/article/cybersecurity-paris-call-of-12-november-2018-for-trust-and-security-in

8 24 September, 2021 : Cyber Security Rating – a rising challenge for EU industries : https://www.etno.eu/library/positionpapers/443-cyber-security-rating-a-rising-challenge-for-eu-industries.html

9 For instance, for operators, currently all technical assets are taken into account for a rating but agencies do not know if the assigned public IP ranges are used by the telecom company itself or by its clients, which biased the outcome as operators cannot manage or control IP address security issues of private customers.

10 https://ec.europa.eu/commission/commissioners/2019-2024/breton/blog/how-european-cyber-resilience-act-will-help-protect-europe_en

DITA CHARANZOVA

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

Ensuring the **digital transition** between **EU territories** as well as in its transnational dimension

We started this new mandate already in the midst of a digital revolution. AI, self-driving cars, European cloud spaces- digital was an EU priority as we looked towards 2020 as the onset of Europe's "Digital Decade", in other words building a successful digital economy and society, and ultimately being a digital leader. Then you know what happened very soon after: Covid.

As the pandemic hit pause on many areas of our lives, solutions to bring these back to us lied in the digital realm. Schools were closed, so teaching went online. People were in quarantine, so grocery and other shops digitalized. Offices were shut, families and friends were physically separated, so online call platforms became a daily necessity for many people. We saw years of online growth take place in just months.

According to the Digital Economy and Society Index (DESI) 2021, all EU Member States have indeed advanced in the area of digitalisation. The overall picture across the EU is not the same, however, with a large gap still existing between the frontrunners and those with the lowest scores.

So the question is, how can we bridge this gap to ensure the digital transition?

While covid catapulted us forward into this digital decade, it also brought some other less welcome trends. More protectionist, inward-looking voices have grown stronger as a backlash to globalization, also within Europe, and ideas of creating a sovereign and autonomous EU have now become mainstream. This also applies to our digital policies, with the term technological sovereignty and strategic autonomy being heard now constantly as our ultimate goal.

These ideas of a stronger more autonomous Europe, nevertheless, can be part of an overall vision that remains open and resists protectionist temptations. Calls for digital sovereignty should not be calls for a closed European market.

We of course will need to look at our internal EU and national policies to achieve our goals - for instance, improving the digital skills of our citizens, improving connectivity, helping our companies integrate more and more digital technologies, and boosting investment. All of this is extremely important, which I have discussed many time before.

One of the priorities in the EU's Digital Compass targets for instance is that by 2030, at least 90% of SMEs in the EU should use digital technologies at enterprise level. In 2020, the number was at only 60% with a huge divide between the top, Denmark and Finland, with around 88%, and the lowest, Bulgaria and Romania, far behind at 33%.

To bridge the divide between richer and poorer Member States, we need to ensure that our companies, especially the SMEs, have the widest choice of relevant providers possible. If we limit their access to just select European providers through protectionist measures masked under the guise of sovereignty, prices will only increase and we will delay efforts to ultimately end this divide.

The only issue that justifies preventing the purchasing of digital infrastructure should be when it comes to real risks to security, for instance in the case of Chinese firms and the EU's 5G network. Otherwise, we still need our partners around the world and they need us.

The newly proposed European Chips Act is a good example. During the pandemic, there was a shortage of semiconductors, which affected a wide range of sectors, from cars to healthcare devices. Boosting EU chip development and production in Europe is therefore very positive to be ready to face future shortages, along with generating innovation, growth and jobs in Europe.

However, to be fully "sovereign" would require multiple times more than the amount of 43 billion euros put on the table by Commission - money that neither it nor the Member States have to spare.

We should not aim for full self-sufficiency at the expense of better and more diverse supply chains. This is not realistic. The aim should be a strategic reserve for the next crisis and for the rest of the time, to allow the markets to provide cost-effective solutions for the developing Member States to catch up.

We must focus on creating and sustaining close ties with allies (in this case of semiconductors, especially with our ally Taiwan) if we really want to ensure security of supply. We need to keep this balance of improving conditions within the EU and maintaining good trade links abroad.

To conclude, to become a digital leader globally and to achieve our digital goals at home, the key lies ultimately in our own competitiveness, which must be done by creating an environment for innovation to flourish organically. Instead of investing time and resources on economic measures to protect from foreign companies, we should invest energy into tearing down walls (both within and beyond our single market) to allow our companies to truly thrive. We need to complete the single and digital single market, and also remove barriers with our partners, most notably the US.

The European Semiconductor Renaissance

CECILIA BONEFELD-DAHL

Director-General of DIGITALEUROPE,

The recent critical impact of the Covid-19 pandemic fallout on the chip industry, has made citizens, businesses, and policy makers aware of the vital place that chips occupy in our modern societies. Exports of semiconductors were also explicitly targeted in the EU's sanctions against Russia following the invasion of Ukraine.

A modern electric car uses about 2000 chips of all sizes, roughly double the number of chips needed in a conventional car. Imagine how many a quantum computer breaking codes in a malicious cyber-attack would require.

Alternative-fuel vehicles will be central to greening the EU transport sector, which is responsible for around 20 % of all Green House Gas (GHG) emissions within the EU. There is no climate neutrality without digitisation and there is no digitisation without a resilient semiconductor ecosystem in Europe.

Chips are also at the heart of any future innovation and security. From gradual AI deployment across all sectors of the economy to 5G and 6G, cloud and edge computing, the semiconductor industry will be central to achieving the EU's digital targets for 2030.

However, do we have the needed capital as well as the right market conditions in Europe to support large scale investments? The truth is market fragmentation in terms of regulations and investment policies, is hindering growth and posing major barriers to large-scale investments.

Therefore, it is extremely important to push for a pan-European investment mindset every step of the way. National interests should never outweigh a smooth European digital transition. When taking over the French presidency of the EU in January 2022, President Macron described "Digital Sovereignty" as being European. No member state on its own can deliver on this ambition.

The European Chips Act: a step in the right direction

Two major aspects of the new European Chips Act stand out: a significant focus on building skills and competences as well as a strong will to ease down the cumbersome construction permit processes.

On the skills and competences front, in 2020, over 55% of European companies reported difficulties in recruiting ICT specialists. ICT specialisation is an essential pre-requisite for a resilient semiconductor ecosystem, especially in the design area.

The support mechanisms pledged by the Chips for Europe Initiative to boost training and skills can certainly help in lessening the talent gap. However, it is important to ensure a coordinated skills building strategy across the continent.

The pledge to set up a network of at least 27 centres of excellence, echoes one of our top recommendations. However, it will be important to work with different sectors from defence and transportation to health and other key areas of innovation.

On new fabrication plants, the recognition of semiconductor production facilities as "first-of-a-kind" in the Union and the set-up of a fast-track permit process, are both favourable measures to ease the red tape bottlenecks. In fact, in Europe, it can take up to 6 months on average and a ton of long administrative procedures for any investor to be granted a construction permit.

Think European, Act European

By any objective standard, the European Union has been a remarkable success story. The post-World War II marked an extraordinary period of economic growth and stability. That quarter century has even been dubbed the European "golden age". But what has European history to do with the current chip crisis?

Partly, the success lies in moving from a nation-state-based economy to a regional one, embedded in global trade structures. This mindset shift allowed companies in Europe to grow and become global giants. Looking at the semiconductor industry today, more of this pan-European thinking is needed.

To strengthen the semiconductor industry ecosystem, Member States need to join forces. Unfortunately, the national recovery and resilience plans do not reflect this. Europe needs to establish a single chips strategy while aligning with our closest tech allies including the US, Japan and Australia.

Beyond the low-hanging fruit

Measures such as easing state aid procedures are a great start but remain short-term solutions. Member states need to be encouraged to act in concert rather than independently.

For instance, Europe is home to some world-class suppliers of raw materials such as substrates and gases, key components for manufacturing chips. The EU's global market share of this crucial manufacturing segment amounts to 14%. The EU equally provides over 23% of the world's chips manufacturing equipment to all chip makers.

There is an unmissable opportunity to avoid scattering foundries here and there and instead setting up regional energy-efficient production hubs. A large-scale EU investment policy will attract top private investors benefiting from a favourable business environment.

The EU should also facilitate cooperation between Member States through coordination fora such as the European Semiconductor Board and the Industrial Alliance for Processors and Semiconductor Technologies, and it is important that representation in these fora mirrors both the need in public and private sectors.

Industry voices will help the EU deepen its understanding of key features of the semiconductor industry to cope with the ever-changing market dynamics.

The Chips Act Package is undoubtedly a major step in asserting Europe's leadership position on the global stage. We look forward to cooperating with Member States and the European Parliament to ensure this package of measures translates into concrete policy and investment measures for the benefit of European citizens.

Strategic autonomy and security of supply in European Defence

MICHAEL GAHLER

MEP (EPP Group – Germany)
Member of the SEDE Committee

With the 24th of February Europe and the world entered a new era. While we were considering the various security crisis of the last two decades – Georgia 2008, Syria 2011, Libya 2011 to name but a few – wake-up calls, the illegal Russian invasion to Ukraine can only be described as a wake-up blow. There can be no other answer than to boost European defence and our efforts for achieving a fully-fledged European Defence Union. The concept of strategic autonomy can be considered as guiding principle to that end as it states the European Union should be able to act autonomously in protection of its own security *if necessary*. This political ambition entails two dimensions: Firstly, it requires that the EU possesses the necessary capabilities, institutional structures and procedures. Secondly, provision of the needed capabilities requires at the same time a capable European defence industry, often referred to as the European Defence Technological and Industrial Base (EDTIB). To perform this task, the EDTIB is not only dependent on demand, supportive political conditions, especially on the European level, but also on reliable and secure supply chains on the European continent as well as globally.

The COVID-19 pandemic illustrated Europe's dependency on global supply chains, most visible with regard to semiconductors in the automotive sector. This technology is not only crucial for the future economic development in general, especially in the field of digitalisation, but also for European defence. Considering that only four out of the top 35 global manufacturers are located in Europe and Europe accounting for about 9% of global production, the high degree of dependencies becomes obvious. We can observe a similar situation when it comes to the so-called "critical raw materials" (CRM) that are essential for modern defence technologies but also for the political ambition of European climate neutrality by 2050. Important dependencies on these materials, e.g. for cobalt which is used in jet engines, are higher than 80%. Therefore, strengthening and securing supply chains as well as reducing dependencies in these areas are political top priority.

European efforts with regard to security of supply in the defence sector mostly focused on the coordination and mutual support of EU Member States within the single market. Starting with a framework agreement endorsed by the Steering Board of the European Defence Agency in 2007, the European Council in December 2013 in its conclusion underlined the need for intensified cooperation within the single market. That paved the way for the adoption of a political commitment to mutual support between EU Member States in 2017. While EU efforts in strengthening the EDTIB, most notably the European Defence Fund, also contribute to increased security of supply within the EU, the global dependencies demand for further action. The current discussions around the Strategic Compass already raised further awareness to the issue that will hopefully lead to additional political initiatives.

Decreasing European dependencies and securing global supply chains requires mainly a threefold approach: diversifying supply, increasing domestic supply and further developing a circular economy which enables recycling and re-use of raw materials. With regard to CRM, in 2020 the Commission presented an action plan that addresses these areas and formulates ten policy initiatives to be implemented by 2025, inter alia developing strategic partnerships with resource-rich countries. In reference to the CRM action plan, the 2021 action plan on Synergies between civil, defence and space industries also highlights the importance of security of supply of CRMs. Furthermore, in its report on a European strategy for CRM in November 2021, the European Parliament called for the set-up of a so-called "Important Project of Common European Interest" (IPCEI) to address CRM supply and sustainable.

In the field of semiconductors such an IPCEI has been launched in December 2021, currently awaiting assessment of the EU Commission. Coordinated by Germany, the IPCEI brings together 20 EU Member States and 90 companies in 32 projects with a budget of 10bn. € intending to strengthen European capacities in that sector along the whole values chain. This initiative gave also impetus to the recently presented European Chips Act that intends to double EU's market share to 20% in 2030 by mobilising a total of 43bn. € of public and private funds in order to increase EU's capacities form research to manufacturing of semiconductors. It also addresses the supply chain aspects by proposing a supply chain monitoring and crisis mechanism as well as partnerships with like-minded countries such as the US, South Korea and Taiwan. Especially, South Korea and Taiwan as the world's leading developers and supplier play a significant role as partners for the EU. Therefore, the recently announced cooperation of Taiwan and Lithuania that also covers semiconductors is an important step that could provide a model for the whole EU.

As the aforementioned illustrates, the EU learned its lesson from the pandemic that shed a light on our vulnerabilities with regard to security of supply. In light of the Russian aggression against Ukraine but also with regard to the general security challenges, drawing the right conclusions and taking effective action, especially in the field of security and defence, is imperative to improve our strategic autonomy. To that end, we need to strengthen our domestic industry capacities, in key technology sectors like semiconductors as well as in security and defence in general, and to forge strong partnerships with like-minded countries.

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EU strategic autonomy: from concept to action

JIŘÍ ŠEDIVÝ

Chief Executive of the European Defence Agency (EDA)

With the security situation in Europe's Eastern backyard remaining extremely tense, question marks around the EU's geo-strategic clout and its ability to care for its own security and defence have risen to the fore. Yet, the debate about European strategic autonomy is not new as this notion was declared a common political ambition and long-term goal already six years ago, in the EU's revised Global Strategy of 2016. The Union's Strategic Compass, currently under preparation and set to be adopted this March, is meant to further underpin and fill this concept with life. Meanwhile, discussions continue about what strategic autonomy would actually mean in practice (notably for defence), where it should lead to and how it would impact NATO and our transatlantic relationship.

As legitimate as they might be, those discussions should not distract us from taking the concrete actions required to bring the EU closer to this goal.

Hence the need to approach strategic autonomy in a constructive spirit and with pragmatism.

To start with, European strategic autonomy has to be looked at as a positive undertaking, not one directed against NATO or the US. It is about putting EU Member States in a position where they can autonomously develop, operate and maintain the full spectrum of defence capabilities they need. It's about giving EU countries the option and ability - technological, industrial, operational, political - to take military action whenever needed, either together with partners (notably NATO) wherever possible, or separately if required. Instead of undermining transatlantic trust and security, as some may fear, a more autonomous European defence will ultimately lead to a stronger NATO. It is in the interest of our transatlantic partners to have a more capable and efficient EU in defence.

The EU's ambition, as stated in the 2016 Global Strategy, is to reach *"an appropriate level of strategic autonomy"* in order to *"ensure Europe's ability to safeguard security within and beyond its borders"*.

However, it takes more than ambition and political will to get there.

Strategic autonomy presupposes at least two things. First, that our Member States' Armed Forces have at their disposal the full spectrum of military assets that, taken together, could enable the EU to take military action and on its own, if necessary. Second, that the functionality and usability of these assets are not restricted by any technological or political caveats controlled by non-European actors.

Better spending, more cooperation

Today, admittedly, this is not the case. Hence the need to invest more, and better, in defence. But more spending does not automatically guarantee more efficiency or interoperability. To achieve that, we must plan and invest better through cooperation: from joint priority setting to development, procurement, and deployment of cutting-edge capabilities. Over recent years, EU Member States put in place a defence planning framework at European level with the Capability Development Plan (CDP), the Coordinated Annual Review on Defence (CARD), the Permanent Structured Cooperation (PESCO) and the European Defence Fund (EDF).

Having cooperation tools in place is not enough, though: they must also be systematically used to make EU defence cooperation the norm. But even then, the real proof of the pudding is in the eating: cooperation must lead to concrete projects which must produce tangible outcome, i.e. usable defence capabilities. Several cooperation platforms are available to do that, including EDA which has gained robust expertise and track-record in initiating and managing collaborative capability programmes. PESCO is another framework for cooperation for the 25 EU Member States which participate in it. Finally, the EDF must serve as a financial incentive and co-finance such collaborative projects. Systematic defence cooperation is thus a first box Europe must tick if it wants to move towards strategic autonomy.

Knowledge, skills, technologies

Secondly, the EU must also be able to master cutting-edge technologies and their integration into defence products. That's why it is so crucial that it acquires, maintains and develops the technological knowledge and industrial manufacturing skills required to produce the defence equipment it needs. Those *Key Strategic Activities* have to be preserved and strengthened if we want to turn the goal of strategic autonomy into reality.

EDA is involved in this critical work since years. At the Agency, we identify critical overarching strategic research areas and other key strategic activities underpinning the EU's strategic autonomy. The aim is to identify and support 'must-have' technologies and industrial abilities without which strategic autonomy isn't possible. The prospect of establishing a Hub for European Defence Innovation within the Agency, as discussed by Defence Ministers in November 2021, will certainly help to give European defence an additional technological edge. A political decision in favor of such a hub at EDA is expected in the coming months.

Artificial intelligence (AI) is only one example of disruptive innovations that are reshaping defence. EDA already does its bit: in 2020, it developed an AI Action Plan on the basis of which several projects are currently being launched. Besides, there is a plethora of new technologies and components which, if fully mastered, can contribute to Europe's strategic autonomy.

Defence cooperation is not an option but a necessity for strategic autonomy. It's through concrete action in defence spending, planning and innovation that we can progress towards it. EU strategic autonomy is not just around the corner, but not unattainable either. The closer we get to it and the more additional defence cooperation it triggers, the better.

Why the **European Defence Fund** marks the Union's age of reason

DOMINIQUE RIQUET

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

The Russian aggression of Ukraine has enacted a fundamental change in the way Europeans view their own security. In just a few hours following the invasion, countries across Europe announced radical policy changes, such as unprecedented increased defence spending. Now more than ever, it is time for Europe to gear up and equip itself with the means to defend its people and territory. Recent policy developments at Union and global level, notably the implementation of harsh sanctions against the regime in Moscow, show that the EU is able to act united and decisively when the situation calls for it. Beyond the upcoming measures that will be needed in the short term to de-escalate and limit the spread of the conflict, Europe will need to integrate assertive unilateral action at its border and beyond into its policy calculations.

Just a few days before the events in Ukraine, the Commission announced a new Defence package, outlining policy priorities to strengthen European defence policy. This Communication is only the latest signal of the EU's increasing involvement in defence policy matters. Amongst the many policy levers available, the European Defence Fund continues to feature most prominently, and understandably so, given the financial and political capital associated therewith.

The European Defence Fund is widely considered as the Union's most significant institutional revolution when it comes to defence, which remains a purely national competence, until today. It is a game-changer leveraging on both EU and national funding to incentivise defence industry cooperation in Europe thus strengthening Europe's strategic autonomy.

Legislators were first told the Union could not support military capability production. Never mind! The European Defence Fund found its legal base in the promotion of industrial competitiveness, an area where Member States share competence with the EU. However, the genesis of the Fund was not without its contentions as it concerned the defence industry, closely intertwined with national sovereignty as well as philosophical considerations. In fact, the regulation underscores the Fund's contribution to European strategic autonomy, a notion largely contested until not too long ago. Just as Parliament's close vote at first reading reflects these complexities, the broad support to this flagship initiative in the new parliamentary term demonstrates a paradigm shift when it comes to strategic autonomy.

Europe's defence industrial landscape is globally recognised for its excellence, with advanced know-how spanning a number of major capabilities (fighter jets, tanks, submarines and even spatial capacity). However, Europe's defence, technological and industrial base suffers from considerable fragmentation resulting in costly inefficiencies. If the military power of the EU was proportional to its Member States' cumulative spending in defence, it would be the second player globally, behind the United States but before China (and far before Russia). The fact that 80% of defence procurement is run on a purely national basis has resulted in 178 different weapon systems in Europe - that is, six times more than the United States - with different levels of modernisation and interoperability. The Fund's financial incentives for industrial consortia bringing together actors from across Member States, addresses the heart of the problem of fragmentation of Europe's defence sector.

Moreover, the EU lags behind on a number of ground-breaking defence capabilities (for instance cyber and quantum technologies for defence) which will shape future combat whereas countries like the United States, China and Russia continue to invest heavily in future-proof solutions. The EU-managed Defence Fund constitutes Europe's biggest asset in addressing these challenges. In fact, part of the Fund is dedicated to the co-funding of disruptive technologies in an effort to enhance the performance and resilience of defence equipment.

European armed forces remain extremely reliant, particularly on American solutions, for certain critical capabilities. This is compounded by the fact that military equipment produced in Europe often relies on American subcomponents, which are subject to extra-territorial regulations such as the ITAR[1]. This norm provides the United States with powerful leverage over a Member State's decision over what to do with the equipment.

In a time when strategic planning was not at the top of the EU's agenda, the European Defence Fund emerged as the biggest milestone towards enhancing European cooperation in the field of defence. Along with the military mobility programme, it is part of the building process of a coherent European strategic space. This ultimately contributes to the strengthening of EU strategic autonomy and technological sovereignty. While the final budget agreed upon is significantly less than what was initially expected (8 billion euros instead of 13 billion euros for 2021-2027), it allows the EU to embark on the path to maturity regarding security, 70 years after the failure of the European Defence Community. With that being said, the "return of tragedy in history" calls for going even further. A more ambitious fund, both financially and politically, would serve a more ambitious Europe. Let us wager that the supporters of a strong Europe will not have given up on the creation of a European DARPA[2] then.

1 International Traffic in Arms Regulations.

2 Defence Advanced Research Projects Agency.

Cooperation, Cooperation, Cooperation

ADMIRAL **MATTEO BISCEGLIA**

Director of OCCAR

OCCAR was established by a Convention, which was signed by France, Germany, Italy and the United Kingdom in 1998. The OCCAR Convention, which is an international treaty, came into force in 2001, giving OCCAR its legal status and allowing it to recruit its own staff, establish cooperative relationships through treaties with other organisations, place and manage contracts. The aim was and still is to provide more effective and efficient arrangements for the management of certain existing and future collaborative armament programmes.

Ever since OCCAR's inception, there have been significant changes and quite a number of developments in the European Defence sphere. The creation of the European Defence Agency (EDA) and the NATO Support and Procurement Agency (NSPA) are but two examples. Recently, there has been the appearance of yet another new party in the European Defence arena, namely the European Commission (EC). Cooperation between these organisations is fundamental to help maximising the output and quality of Member States' investment in defence. Cooperation is the only solution to make future technologies affordable again for the Nations. Cooperation is also the biggest trump card OCCAR can play when realising European Defence objectives, now and in the future.

If there is enough political appetite to promote cooperation between Nations, defence industries and international organisations, OCCAR can pick up the role in which it has been successful for decades, namely complex cooperative armament programme management. OCCAR currently manages 16 programmes with a combined budget of close to 80 billion Euro, which will increase to about 100 billion Euro in a short timeframe following the signature of the TIGER MKIII and MALE RPAS Stage 2 contracts, as well as contracts related to some additional programmes under integration. OCCAR will continue to monitor cooperative armament opportunities, in coordination with the Ministries of Defence of the OCCAR Member States. However, if Nations have the desire to only rely on their national Defence Industrial Base, this could lead to a situation where Europe again faces a duplication of effort and possibly a decreased level of interoperability and standardisation.

European leaders are boosting cooperation at industrial level, while on the other hand, fragmentation on the procurement management scene can be observed as well. Duplications should be avoided, not only from a programme management perspective, but also from a procurement management perspective. The imminent risk of overlapping and/or competition amongst procurement organisations across Europe needs to be urgently mitigated. A split of economic resources, amongst a larger number of programme and procurement management organisations, a waste of skills and expertise, as well as redundant administrative expenditures need to be avoided as the resulting increased financial expenses will be to the detriment of technological development.

Avoiding duplication and fragmentation, improving interoperability and standardisation, and minimising additional costs can be materialised by identifying centres of excellence, that can coexist as partners by performing on the basis of their experiences and skills and by sharing knowledge. This approach can support a more integrated, innovative and cooperative European Defence for the benefit of both Nations and Industries. The OCCAR Convention clearly states that OCCAR was specifically created to increase the Member States' armaments cooperation. Hence, Nations should adhere to this objective and refrain from doing the opposite by creating competition between international organisations.

OCCAR and EDA consider each other as privileged partners in the domain of cooperative European Defence capability development and delivery. Under the European Defence Industrial Development Programme (EDIDP) umbrella, Contribution Agreements for the Eurodrone and ESSOR Programmes were signed between OCCAR and the European Commission, assigning the management of both programmes to OCCAR. Later, a third programme was assigned to OCCAR, namely Responsive Electronic Attack for Cooperation Tasks (REACT). Service Level Agreements have been signed with NSPA to cooperate in the In-Service Support domain for different programmes such as A400M, Tiger, Cobra. OCCAR manages the Multinational Multirole Tanker Transport Fleet acquisition phase, including the first two years of In-Service Support, as the Contract Executing Agent for the NATO Support & Procurement Agency (NSPA). All these examples show that cooperation is possible provided the will exists at all levels to cooperate.

It is clear that, when looking beyond the horizon, OCCAR does not only look at the integration of programmes emerging from bilateral/multilateral agreements amongst Member States or through EDA. The picture would be incomplete if OCCAR were not to look at growth opportunities through EDF co-funded projects, PESCO initiatives or from new non-Member States. As Nations' defence budgets are continuously put under pressure, OCCAR strives to work towards doing more with less, lowering costs and increasing efficiency.

Together with Nations, OCCAR can play a vital role in ensuring that the European Defence industry remains competitive and that capabilities are delivered to protect European security. Although OCCAR continues to be proactive in the defence capability arena, it is ultimately up to the Nations to decide on OCCAR's future. The support of the Member and Participating States is paramount to ensure that Europe obtains a more important footprint in the defence arena. OCCAR is ready to step into this arena, whenever it is called upon to do so.

Europe needs to **invest fresh** money in new **space technologies**

MARIAN-JEAN MARINESCU

MEP (EPP Group – Romania), Member of the TRAN Committee, Chair of Sky and Space Intergroup

I welcome the new space initiatives announced this week by the Commission, and more precisely the Regulation establishing the Union Secure Connectivity Programme for the period 2023-2027 and the Communication on An EU Approach for Space Traffic Management.

It is high time for the Commission to speed up the process, as we have to admit that EU was too slow comparing to the other space powers and to the private sector.

Regarding the EU space-based global secure communication system, during the European Space Conference from January, Commissioner Breton announced that the Commission is counting on Member States and the European Parliament to move fast and to conclude negotiations in one year.

As you know, The European Parliament and also Sky and Space Intergroup always supported Space legislation. As it was just launched, I am now analysing the legislative proposal, to see how the program is build and especially the architecture of the governance, the level of involvement of the space industry in, and of course how the programme is financed.

In my opinion, Space Traffic Management is a must and it should have been ready years ago. With more than 30 000 additional satellites to be launched in the near future, let`s hope that we will still have where to launch our satellites. I am glad to see that my pilot project on STM, tabled years ago has now came to an end and it is the starting point the EC`s Communication on STM.

As were expecting these two programmes from the Commission, ITRE Committee already scheduled a hearing on space programmes for the end of March. In addition, the Sky and Space Intergroup from the European Parliament has on its agenda a next meeting dedicated to Space Traffic Management. I expect from these two debates to be a moment of clarifications from the Commission and of concrete inputs from the stakeholders involved in space industry, and of course from my colleagues from the European Parliament.

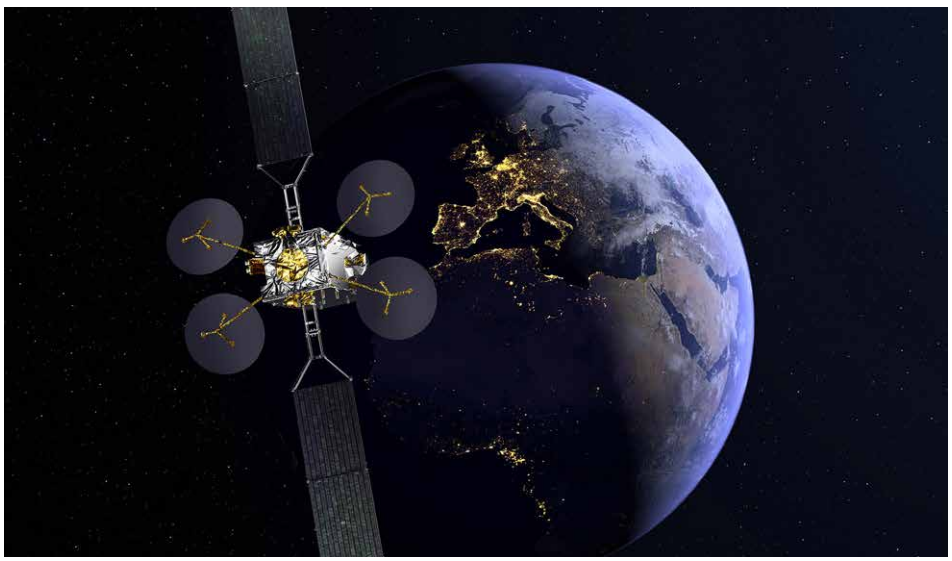
It is a fact that for these two new programmes as well as for all our space programmes to be efficient, funding is a key condition. For the moment, Space Traffic Management came from the Commission as a communication, which means that there are not any funds allocated, yet.

But, it is obvious to anyone that in order to be able to improve our technological capacity we need funds. We have to acknowledge that the deployment of a European STM is an immense challenge that requires proper funding. It is not an encouraging news that in its Communication on STM, the Commission is not mentioning a clear funding solution. As, to speak just about EU Space Surveillance and Tracking capabilities, the texts underlines that "*In order to face the STM challenges, EU must further develop its SST capabilities to a sufficient level of autonomy.* "

Regarding the Secure Connectivity Programme, my worst fear just became a reality.

The Commission proposed a budget of 1.600 million from 2023 to 2027, but the budget is composed through reductions from other programmes: EUR 260 million of the Union Space Programme; EUR 150 million of the Neighbourhood; Development and International Cooperation Instrument (NDICI), EUR 400 million of the European Defence Fund (EDF), EUR 440 million under the Digital Europe Programme (DEP), EUR 200 million under the digital strand of the Connecting Europe Facility (CEF) and other funds reallocations.

My hope is that in the Parliament we will succeed to improve the proposals made by the Commission and that we will be able to offer EU the necessary provisions and funding to gain its autonomy as a real international space player.



European human spaceflight: The next step in our European Access to space?

CHRISTOPHE GRUDLER

Member of the European Parliament
Vice-Coordinator Renew Europe for the Committee on Industry, Research and Energy (ITRE) - Substitute member of the Committee on Security and Defence - Vice-President of the Sky & Space Intergroup

With just a few months to go before the maiden flight of Ariane 6, Europe's new launcher, some might ask what is the point of having a European launcher, when we can use those of the USA or the Russians.

The answer is simple: it's about preserving our access to space.

We sometimes tend to forget it, especially in our everyday lives, but space is crucial. Firstly, for citizens, to geolocate themselves, to have access to television or the Internet. For scientists, to monitor the state of our planet or measure the concentration of greenhouse gases. But our satellites are also crucial for the military, whether for observation or communications in the field.

In short, space has become indispensable to the functioning of our societies.

If we depended solely on foreign powers to put our satellites into orbit, that would be a problem. We would no longer be autonomous in our access to space. If a European country wants to put a state-of-the-art military satellite into orbit, without having to go through a third country, we need our own launchers.

I am therefore delighted that we finally have Ariane 6, a cheaper and more flexible launcher than Ariane 5, which should be able to put a wide variety of satellites into orbit.

Produced in two versions, Ariane 62 (two auxiliary thrusters) and 64 (four auxiliary thrusters), this new launcher will be able to carry out civil and military launches from Kourou (French Guiana), our European spaceport.

And with Vega and Vega-C, and the many mini-launcher projects that are coming, Europe will be able to cover all its space launch needs.

This strength will also be a strength internationally, where we can sell our European launch services, especially to friendly countries. Let us remember that Ariane 5 has been an incredible commercial success, with more than 112 launches since its debut in 1996.

Now, one question that could arise in the future is that of our European access to space for humans.

Technically, we would know how to do it. Europe is already a world leader in the design of space modules and satellites. For example, Europe will manufacture part of the next Lunar Gateway station, which is due to be put into orbit around the Moon at the end of the decade, in partnership with NASA.

The question is rather political: in recent years, in Europe and in particular ESA, we have chosen to cooperate for our space flights.

First with the Russians, by putting our European astronauts on board the famous (and indestructible) Soyuz. Then, more recently, in cooperation with the United States of America, with the flights operated by private operators on behalf of NASA.

I do not believe that the choice of cooperation was a bad one. The launch services offered by the Russians and the Americans were efficient and safe, and they allowed many generations of European astronauts to reach the ISS since 1998.

The main disadvantage is that we are dependent on the seats these countries are willing to give, and each seat is paid for dearly. Hence the question: isn't it time to have of our own European capability to send astronauts to space? Whether to the dark side of the Moon or Mars, the possibilities for exploration are far from exhausted!

Manned flight from Europe would be that it would send a strong signal to Europeans: look what we can do when we are united.

Because let's face it, the European space programmes may be fantastic in scientific and technological terms, but nothing makes people dream more than manned flight.

This is why I am very pleased that the European Space Agency (ESA) and the European Union are working on a new impetus for human spaceflight, as announced on the 16th of February at the European Space Summit in Toulouse.

This new momentum for human spaceflight in Europe is a great milestone, that could lead to European capabilities to send astronauts into space from European soil.

Of course for the moment, we need to continue our strong collaboration with other space powers to send astronauts into space, in particular with NASA.

This has begun with the Lunar Gateway programme that I mentioned earlier, which will enable us to send astronauts around and then to the Moon. This project could be a first step in perfecting our technologies, before future missions Mars.

Missions to the Red Planet, for which in would be fantastic to have Europeans women and men flying on European rockets, departing from our European Space Port!

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STÉPHANE ISRAËL

CEO of Arianespace

Space is a vital component of any drive towards EU **strategic autonomy**

In a changing geopolitical context, where many powers are emerging and establishing themselves on the international scene, Europe is organized to keep its rank and consolidate its sovereignty – which requires a strategic autonomy. This does not stop at defense and security; the capacity to take decisions and to undertake actions in all sorts of domains lies on our capacity to have at our disposal technological, industrial, intellectual capabilities on our own. What is the place of launchers in terms of sovereignty? It is precisely a concentrate of strategic autonomy issues and an example of success in this field!

The European space sector has developed precisely in the face of a sovereignty matter regarding access to space: at the start of the space race, we used to rely on American means to launch our satellites and were not masters of our capacities. Thus, in 1975, the European nations joined within the European Space Agency (ESA) to develop competences in access to space. This is how the Ariane and, later on, Vega launchers were born, leading to the successes that we all know.

The European States have immediately understood the importance of space for their sovereignty: Earth observation, secure telecommunications, global positioning, security, science... European space has always been a matter of public investment, its launchers Ariane and Vega being developed under ESA mandate, with Arianespace as its unique launch service provider. Despite a much lesser volume of institutional demand, European industry has achieved a remarkable level of competitiveness on the global commercial market, capturing significant market shares on all commercial and export segments. This is of course very beneficial for our public customers, but it also exposes European capabilities to commercial markets downturn, with high uncertainties.

This organization guaranteeing European strategic autonomy in space is being challenged by exacerbated competition from across the pond. The Buy American Act favors domestic products for direct government purchases. This means that, unless for projects in competition, U.S launchers systematically operate American institutional satellite launches. U.S launchers are boosted by very lucrative U.S orders, so that they offer very low prices on the European market.

To counter this treat, and in order to maintain sovereignty in space, we need a European preference for launchers: all European missions must be launched by European launchers. We need to ensure this choice in Europe, accompanied with an ambitious number of missions, which is essential to preserve our highly qualified space industry and our autonomy of access to space.

This European preference must materialize; otherwise, it will remain a wishful thinking. For that, we need major and federating projects to strengthen our launchers. Europe is stronger with its flagship projects! For example, the Galileo and Copernicus programs are great successes. Galileo is now the most accurate positioning system in the world and its deployment has resulted in 11 Arianespace launches over 10 years, and is still ongoing from the Guiana Space Center (CSG). For its part, Copernicus provides countless freely available data on our planet to help agriculture, climate monitoring, companies, etc. Its deployment has resulted in 7 launches by Arianespace since 2014.

We must not stop there, and engage the future with new flagship programs stirred by public investment, hence initiating public-private partnerships. The project for a European secure connectivity constellation is essential – and the recent publication of the proposal for a Regulation that will, when adopted, allow its implementation, is a confirmation that the Commission is perfectly aware of its importance. With a budget estimated at 6 billion €, equally shared between the European Commission, Member States and the private sector, Europe will be giving itself the means to maintain and strengthen its autonomy in telecommunication and, as a positive "side effect" will actively contribute to further secure it independent access to space. It will – on top of granting European citizens means for a better life - consolidate the entire European space sector and its competitiveness (base, launcher, satellites, operators...). This is why Arianespace is already part of the consortia set up by the Commission to prepare the initiative. Arianespace is positioning itself as the benchmark launch service provider for this ambitious program: Ariane 6 is perfectly adapted, as the deployment of the constellation will obviously need a heavy launcher, which will be complemented by Vega C.

In this context when we need to consolidate our sovereignty of access to space, Europe committed to its launchers in August 2021, with the ESA resolution securing Ariane 6 and Vega C exploitation. The ESA assigned for the stabilized phase of Ariane 6 and Vega C to a minimum set of launches and funding of industrial capabilities, while the industry commits to target costs. This allows Arianespace to propose Ariane 6 and Vega C at competitive prices and aim for high launch cadences. This Resolution ensures a better level playing field with our US competitors, largely supported by their institutions, which allows them to propose very aggressive prices.

Alongside with the European Secure Connectivity Constellation, the ESA Resolution and its full implementation by all European public stakeholders procuring satellites, are the two key recent initiatives for guarantying Europe with a long term autonomous access to space. We are progressing in the right direction!

EU space policy and the European space industry play a vital role in the EU and its economy

MASSIMILIANO SALINI

MEP (EPP Group – Italy), Member of the TRAN and INTA Committee's

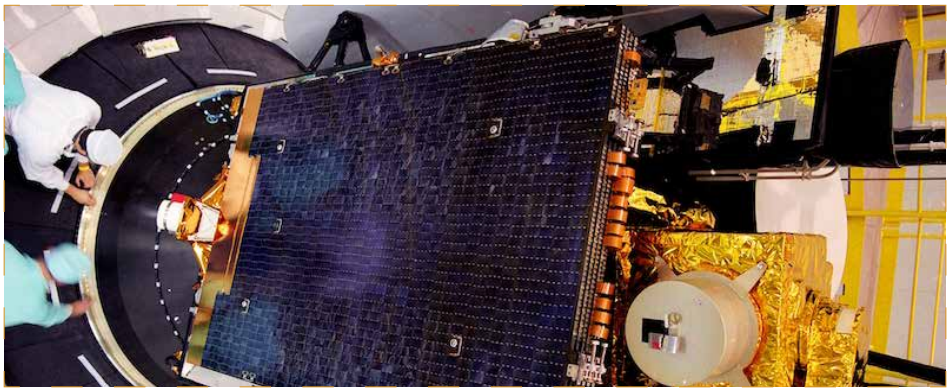
Far from being a slogan, the so-called *New Space* is a concrete phenomenon that is affecting the European Union too, where a profound transformation of the space landscape is undergoing, maturing and shaped by new actors, such as new space-faring nations and in particular by new private actors, as it was acknowledged in a dedicated Council's conclusion dating from May 2021.

The liveliness that has invested this sector, in a period of economic recovery for our Union after the Covid 19 crisis, is extremely interesting and question the decision makers in Brussels about the potential of this market. Is the space sector an asset for strengthening the European industry and for the recovery of the EU economy? As rapporteur of the EU Space Programme - the key regulation for the sector entered into force last year - I always approached the space policy as an incredible asset for the EU economy as a whole, from which both companies and citizens can benefit greatly.

The numbers confirm that betting on this sector is indeed a good idea: a recent study of the European Parliament requested by the ITRE committee shows that 10% of the EU's GDP rely on space. If we go further into details, the upstream sector, that covers launchers aerospace prime/satellite manufacturers and satellite operators and it is dominated by big players, generates EUR 8.8 billion and more than 40 thousand jobs.

Through the work on the regulation, the co-legislators managed to secure the framework that strengthen the competiveness of our industry, while ensuring the necessary strategic autonomy, allowing the EU to continue playing a role at global level.

Alongside this segment, there is the down-stream sector, which is made of companies of



different size (often SMES and start-ups) that develop services and applications by using data from satellites and space technologies. Some concrete examples are the CO_2 monitoring, precision agriculture, emergency management and response.

Despite these important applications, the potential offered by the so-called space downstream is still undefined, as a matter of fact when assessing the manufacturing of the space sector, the space downstream is not even taken into account in this classification, mainly due to the fact that its boundaries are not well defined.

From this great fragmentation can depend a dramatic lack of awareness: a player that is not aware of being part of a supply chain can miss the opportunities offered by the market itself (and in this case by the Space Programme).

For this reason, recognising and actively promoting the potential of the downstream has been one of the key priorities of the legislators and the new Regulation has a strong focus on this subject. The role of European institutions has been to promote open participation for start-ups, new entrants, small and medium-sized enterprises, and other economic operators, both in the upstream as well as in the downstream market.

As of today, there is no European legislative framework for the space downstream, but something is moving: last year the European Commission launched CASSINI (Competitive Space Start-ups for INnovatIon), an initiative that aims at supporting space entrepreneurship by providing EUR 1 billion of access to risk capital, expanding the number of start-ups in the EU, building businesses based on innovative EU space technologies, services and applications and accelerating their growth and scale up and drawing attention to this sector as a potential investment among venture capitalists.

to streamline the management and guarantee the full exploitation of the down-stream sector could be the creation of a working and steering group, involving representatives of the institutions and of industry under the supervision of EUSPA agency in order to set up a targeted roadmap.

EU initiatives in this domain might not yet allow us to reach the moon, but they are key tools for our economy. Let's harness this potential.

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