ECIPE | EUROPEAN CENTRE FOR INTERNATIONAL POLITICAL ECONOMY

POLICY BRIEF

No. 1/2021

The EU Green Deal and Its Industrial and Political Significance

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EXECUTIVE SUMMARY

The European Green Deal, the flagship initiative of the incumbent European Commission, aims to cut greenhouse gas (GHG) emissions to 55% by 2030 (from the current target of cutting 40% of 1990 levels) by overhauling fiscal, trading and regulatory regimes. Brussels is well-placed to deliver the inter-regional distribution or the minutiae of technical regulations that this challenge calls for. Energy diversification is also central to EU competitiveness and strategic autonomy.

But this initiative is not costless: its official impact assessment points to a GDP loss of additional -0.3 to -0.7%, by 2030, relative to the previous level of ambition. The full loss could be up to -2.5%. These costs are also unevenly, and the inability to cushion asymmetrical shocks have nearly torn the Union apart in the past. A carbon-neutral Europe could also make losers out of today's winners among stakeholders and give the EU a significantly different industrial structure, forcing over-exporting Northern Europe into reforms that are probably overdue.

Most importantly, the gap between the financing needed and the financing available is unprecedented. The success of the European Green Deal and a cost-efficient transition hinge on the rapid and effective mobilisation of investments – as the diffusion period for new energy-related technology is 40-50 years. Therefore, a smart climate policy does not just distribute costs and investments between different groups, but also over time: The investments are needed now, if we are to reap their benefits before 2050.

The author thanks Ronald Steenblik and others who generously provided insights and comments while drafting this note.

1. INTRODUCTION – A GREEN STRATEGY TO UNDERPIN ALL OTHER STRATEGIES

The political cliché tells us never to waste a good crisis, and the new European Green Deal does not let anything go to waste. The package was launched under the attentive care and aegis of the EU Commission President herself last December, aiming at transforming the global climate crisis into a European opportunity. On the back of the European Green Deal,[1] there is the Commission proposal to step up the efforts to cut greenhouse gas (GHG) emissions 55% by 2030 – compared with the ambition of a 40% cut of 1990 levels. By 2050, the EU should reach net-zero carbon emissions, compared to the previous goal of an 80% reduction.[2]

While China already made a similar pledge ahead of the EU, other major economies have followed the EU's lead, including Japan and Korea. The incoming Biden administration has also re-joined the Paris Agreement on its first day in office. Perhaps it is a testament to Europe's ability to shape the global narrative: In the midst of a worldwide pandemic that so far has cost over 2.2 million lives and when world leaders are concerned with building intensive care units, the EU can divert the global attention to carbon leakage.

With its sight set on delivering some very urgent and existential goals for humanity, the European Green Deal provides a roadmap of 47 action points initialised (and some even completed) before the end of this year.[3] But at the forefront of the list is a new EU-wide industrial strategy (expected in March 2021) that could redraw the market landscape. Whereas previous attempts at an EU industry policy did not leave much dent as – unlike a national government – the EU lacks fiscal powers and a mandate for industrial restructuring, the European Green Deal brings the political clout to bust those limits on Brussels competences. Also, by binding the greenhouse gas (GHG) reductions, the European Green Deal is certain to induce structural changes that will transform the Single Market by reallocating resources internally and redistributing wealth.

In some respects, this redistribution is not an unintended consequence: it happens by design. In parallel to the Green Deal, the "Just Transition Mechanism" is designed to buy off those regional interests that are losers in a *net-zero* economic order.[4] In a carbon-neutral economy, these groups could find themselves not just without livelihoods – they also lose their political influence. As controversial as it may sound, it is not given that that the carbon-neutral economy is by any means politically sustainable for EU politics.

As the Green Deal has widespread support among the EU institutions and European capitals, it is almost sure to become a political reality. The cost of failure is already too high, as a failed European Green Deal would also mean a much broader EU policy failure. The co-executive institutions of the Union, the Commission and the Council, are both tied to its mast. Provided the urgency, there is very little room – or indeed patience – for debate.

Needless to say, debating climate change is rarely an instructive endeavour that often sinks into unscientific polemics. But those who say there is no time to debate and want immediate and decisive political action are doing a disservice to the climate change goals. The EU debate sometimes deliberately confuse the merits of the *goals* and the *process* designed to achieve those goals: Debating the best route is not to question the destination of carbon-neutrality: It is a constructive discussion on the most efficient way to arrive at that goal. As this goal is above all politics, we have a duty to ensure that our chosen course of action actually delivers them.

[1] European Commission, COM/2019/640 final

[2] European Commission, COM/2020/80 final

[3] Annex to COM/2019/640 final

[4] European Commission, COM/2020/22 final

The famous quote goes: "Politics is the art of the possible and the attainable" – but European politics is typically no longer guided by Bismarck, and a failure to meet policy objectives rarely leads to a debate about a possible mismatch with its means. In EU politics, there are never trials despite repeated errors. Failures and inaction tend to be attributed to a lack of "political will" – in other words, an insufficient belief in the EU gospel and its quantitative metrics.

This note provides some context to the economic aspects of the European Green Deal, building on its official impact assessment.[5] The analytical work is comprehensive and uses several relevant modelling methodologies, including a computable general equilibrium (CGE) model that captures the economic effects better than the others. According to this model, the EU GDP shrinks by an additional -0.3 to -0.7% compared with the current baseline scenario. Some costs are unavoidable, but those that are avoidable should be avoided – especially if they are not distributed equitably. The research shows there is a choice in how we want to achieve our goals – and these choices are not yet made.

However, the official research that accompanies the European Green Deal does not reveal the full extent of economic costs (going from today to 55%), and only shows the incremental impact from more ambitious emission cuts. Moreover, the Commission's CGE model is based on the assumption that we are on a path for 47% reduction rather than the originally agreed target of 40% by 2030.[6]

Nonetheless, the models assert that the total energy system costs (including carbon pricing payments) will reach 12% of EU GDP, which have consequences on EU industrial structure and industrial competitiveness on global markets. This note merely attempts to discuss the political and economic implications of that transformation, and how it will affect the choices we make towards the goals we have set for 2050.

2. THE POLITICAL IMPORTANCE OF THE GREEN DEAL

To call the European Green Deal just another "flagship initiative" of the Commission President and the incumbent group of Commissioners is probably an understatement. Given its breadth, and the sheer amount of both political (and actual) capital it consumes, the European Green Deal comes close to being the whole armada, rather than just a political vessel ferrying the admiral.

President von der Leyen should not be accused of engaging in a legacy-building political vanity project or political gambits. The Green Deal begins with enshrining the objective of carbon neutrality into binding law, for both the EU and its Member States. The goal is followed by a list of action plans, regulatory agendas and sub-action plans. It promises some fiscal measures, including an overhaul of the Emission Trading Scheme (ETS), a controversial plan on carbon border adjustment mechanism (CBAM) and other forms of energy taxation. There is a comprehensive list of sectoral regulations to implement the circular economy – within farming, batteries, cars, chemicals and even inland waterways. It proposes a review of EU energy security. As such, the European Green Deal with inevitably affect our foreign policy, including relations with neighbours like Russia. The European Green Deal even explicitly states the objective of establishing Europe as a geopolitical power through sustainability.

In other words, the European Green Deal is a strategic plan that underpins all other plans. Also, the fact that it is sold as a *deal* – rather than a "strategy", "bazooka", "agenda" or other

[5] SWD(2020) 176 final

[6] ibid. Baseline scenario presented in the study assumes a 47% reduction of GHG emissions against a 1990 benchmark

ambiguities of the EU vernacular – hints at how its drafters aspire for a Rooseveltian legacy, with a new societal contract for Europe. Here is where the political narrative submerges into identity: To be European is to be carbon neutral.

More practically, tackling climate change calls for an interregional and multinational coordination function that Brussels is well-placed to provide. The EU excels in the minutiae of technical product regulations. Its equipped with committees that can agree on "normative frameworks for a taxonomy for classifying environmentally sustainable activities".[7] The EU is also particularly well-suited and experienced in redistributing wealth between regions; or providing direct support to areas where livelihoods depend on carbon-intensive activities.

One such area is coal. The incremental increase in climate goals reduces the output of the coal industry by 40%. The full difference between today and 2030 (or 2050) is hard to spell out, but some data suggests two-thirds of all coal sector jobs could be lost by 2030.[8] The transition will have a severe impact on Bulgaria, Czechia, Germany, and Poland. In particular, Bulgaria and Poland have the highest CO2 emission per euro in economic output –[9] almost three times the EU average, suggesting that the entire competitiveness of the Bulgarian and Polish industry would be affected.

In sum, it cannot be ignored that the European Green Deal comes after a decade of consecutive existential crises for European unity. The inability to cushion asymmetrical economic shocks nearly tore the Union apart on more occasion than just one – whether they were caused by the global financial crisis, sovereign debt or immigration. Carbon neutrality is another such shock. However, the European Green Deal also repurposes the EU as a whole – and provides its executives with a new *raison d'être* for its decision-making and re-distributional functions.

3. A "GREEN" EUROPEAN INDUSTRIAL POLICY

Climate change is an unprecedented sea-change, in a literal sense. However, history tells us that energy readjustments are not entirely new. The oil shock of the 1970s revealed the unsustainable economic dependencies of crude oil from the Middle East; and the vulnerability of Western Europe and other "resource-poor" economies. It also boosted some economies with access to natural gas, others unwisely chose to substitute imported oil with domestic coal – and as some regions even exported their coal, they ended up being even more vulnerable to external price shocks than before the oil crisis.[10] It is the wisdom of those responses that we are still observing today, half a century later.

To the extent "energy poor" countries could successfully fend off the previous shocks, it was through national technological prowess, strong deficit spending or collective stoicism of the general public. The latter is not an attractive policy tool for any executive. The first two are not readily available to the EU executives without institutional reform that could take longer to implement than the European Green Deal.

The EU must enable new technologies that can offset transition costs and provide relief. Doing so require new funds. Cost of R&D and technological adaptation is a budget line that is typically calculated through bottom-up cost accounting rather than through macroeconomics. Nonetheless, models can tell us what levels of investments were assumed to arrive at the published results on GDP, employment or welfare.

[7] An actual example from COM/2019/640 final

[8] Baran, Szpor, Coal Transition in Poland, IDDRI, 2018

[9] CO2 emissions (kg per 2010 US$ of GDP), Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory

[10] See Ven, Fouquet, Historical Energy Price Shocks and their Changing Effects on the Economy, Grantham Research Institute, Working Paper No. 153, 2014

According to the CGE model, the 2030 reductions targets assume incremental investments on a scale of 0.5 to 1.1 trillion euros. However, a complete reduction by 2050 will require another additional 4.1 to 4.7 trillion euros depending on the policy scenario, bringing the sum to nearly 6 trillion. Of course, these results assume that all the necessary investments requirement to reach the original target for 2030 are already fulfilled. In addition to those investments, there are also increased energy system costs that run to 170 billion euro a year. In total, the incremental spending increase is more than 11 trillion over thirty years – still bearing in mind these are just the cost from incrementally raising the ambitions from 47% to 55%.

In comparison, the Just Transition Mechanism directs 17.5 billion euros towards coal-dependent regions.[11] These funds were also drawn from a one-off CoVID stimulus package, and the regular EU budget; the Commission also propose that at least 25% of the regular EU budget should contribute to climate action during 2021-27 to strengthen "climate mainstreaming", whereas at least half of the famed €1 trillion (which is still short of the 6 trillion implied by the model) is a reallocation of existing EU budgets. The remainder is also a reallocation of investment funds (InvestEU) already leveraged by European Investment Bank (EIB).

The gap between the investment requirements and EU funds committed may seem daunting: 2021 is the halfway point between 1990 and 2050. €17.5 billion for Eastern Europe and opening up the taps via EIB and ECB is far from *nothing*. Some Member States will allocate funds provided that they have the fiscal firepower to do so, and Germany will enact a national €40 billion transition fund. Also, a higher degree of market participation or asset ownership by governments is hardly a desirable outcome in a market economy.

Most subsidies, including those for innovation and R&D, may be relatively uncontroversial. However, there will be questions on how other investments will be qualified and chosen. Obviously, the investments should deliver towards GHG reduction. But ideally, public investments should also generate high multiplier effects – i.e. secondary effects to boost employment and consumption – and thereby reduce transition costs for workers and consumers. Public spending should not leave the economy as corporate dividends or savings. An activist industrial policy might also support a major infrastructure company to scale to compete against competitors from a minor Member State. The notion that funds from, say the Nordics, can be used to help a French or German company to displace one of its own businesses might be too much to stomach.

More generally, an activist EU industrial policy runs a much higher risk of regulatory capture than their national equivalents – simply because stakes are higher for laws that cover larger markets and given the dominant role EU plays in international standard-setting. As the industry sees a higher pay-off from lobbying than innovating, there is a risk for "regulatory capture". Corporate interests overinvesting in lobbying leads to policymakers acting in the interest of businesses that they were supposed to be regulating, rather than regulating on behalf of public interest. Industrial planners could end up serving an obscure sub-goal that contradicts the bigger public interest of decarbonisation.

[11] European Commission, Commission welcomes the Political agreement on the Just Transition Fund, 11 December 2020

4. UNMITIGATED, DECARBONISATION WILL ALTER EUROPE'S INDUSTRIAL STRUCTURE

But decarbonisation is also an industrial policy in its own right. Regardless of how the amount of new green investments are generated, Europe's industrial structure will inevitably change if energy and transport costs rise substantially. The share of manufacturing of EU GDP is already shrinking as a consequence of long-term global trends – and accounts today for less than 15% of EU GDP,[12] compared with 20% thirty years ago. This declining importance of manufacturing is not just a relative one, due to the rising share of services. We should be aware that very few politicians embrace this "de-industrialisation" trend, and routinely make political pledges to buck it.

Naturally, manufacturing sectors also play a role in the politics of CO2 emission. Despite shrinking in relative size, the share of CO2 emitted by the EU industry is relatively constant, at 20%.[13] In other words, European manufacturing is not doing its fair share of decarbonisation. Even compared with a relative "dirty" economy like the United States, European manufacturing is both larger and emits more CO2 than the US manufacturing sector.[14] This is in part possible thanks to the EU emission trading scheme (ETS), which allows our industry to purchase its way out from emission cuts. After all, it is only the national bottom line that counts.

Most studies show how ETS-based methods are less harmful to the economy than regulation-based approaches to achieve the same goals. However, the potential for trade or price-based mechanism becomes limited in a net-zero world in which any emission mitigation can be gained through positive land use, land-use change and forestry (LULUCF) activities. Ideally, private capital will be incentivised to seek less resource-demanding and more knowledge-intensive activities, like services. However, the consequence is also an accelerating pace of "de-industrialisation" with manufacturing accounting for a lesser share of domestic value-added. Alternatively – or perhaps concurrently – domestic and global capital might flee European equities or seek out alternative markets overseas that offer higher returns, in addition to better shareholder dividends or profit margins thanks to more efficient environmental policies.

This will further aggravate the pre-existing low rates of investments or FDI flows into Europe. There is new competition from emerging markets with naturally higher GDP growth rates, or OECD economies with more attractive fiscal conditions. There were previous periods of intensified de-industrialisation due to short-term shocks from oil shocks, or exchange rate appreciation. In those days, lower exports and current account deficits were counterbalanced by investment liberalisation, leading to an inflow of foreign investments. But needless to say, the investment opportunities are far more diversified today than they were three or five decades ago.

5. GLOBAL COMPETITION MOVES TO TRADE

This risk of capital divergence brings us to the question of global competition. As the major economies (who also happens to be our competitors on the export markets) have formed a consensus on carbon neutrality within a reasonably similar timing interval, the global governance issues over target-setting have come to an end. The agreed targets are now translated into national planning processes, and the EU is not alone in making industrial policy and geopolitics out of climate change: China, Japan and the United States all have their own "green deals" – each with a different commercial logic that competes and counteracts with Europe's interests and intentions. The big powers will brand climate actions of others as unfair subsidisation or technical barriers to trade.

[12] Eurostat, 2020

[13] ibid.

[14] IEA Statistics, 2019

It should be said that the industries that are most significantly affected by decarbonisation – heavy manufacturing, extractive industries, transports and agriculture – are typically not the sectors that embrace foreign competition in the first place. Thus, we cannot assume that the principal benefit for CBAMs – i.e. carbon tariffs – is to incentivise other economies to step up their climate ambitions on par with Europe's. Especially as history has over and over again proven that trade policy is not a very effective short-term tool to induce reforms in other countries.

Instead, unilateral measures such as CBAM are just necessary trade-offs to compensate affected industries for cost hikes, loss of global competitiveness and world markets. According to the current rulebook of the World Trade Organization (WTO), CBAMs are illegal tariffs, if they are imposed on foreign imports but not on like domestic products.

Regardless of whether the EU succeeds in rewriting those rules through negotiations, or decides to put up with WTO-sanctioned retaliation for treaty violation, carbon tariffs are likely to lead to reciprocal discriminatory treatment of Europe's export interests. Therefore, a net-zero economy leads to a new trading order that incentivises multinationals to shift to investment-led growth or entrench their home markets. Higher shipping costs will further disincentivise cross-border trade in goods. Those who are dogmatic about free trade might find this veer towards domestic markets a green deal-breaker.

But policymaking is rarely that black and white – or green. The natural instinct of EU policymakers and industrialists is to lean on Europe's soft powers to promulgate EU regulatory models or industry standards to create compatible legal frameworks overseas. Compatibility drives down export costs. Such changes in other countries' domestic regulations can be achieved through lobbying or sanctions that are often leveraging the access to the Single Market.

While the logic is relatively straightforward for car safety standards or chemical regulations, environmental standards and energy taxation work somewhat differently: Cost-imposing measures like climate mitigation are equally about compatibility as they ensure that foreign suppliers do not enjoy cost advantages against EU exporters in third markets. The so-called "level playing field" is also an imperative in policy areas other than climate change, most recently in Brexit talks. However, symmetrical costs (i.e. other markets adopting similar green regulations) produce somewhat counterintuitive results. Modelled in a non-static global model, we see that concerted global action on climate goals merely amplify the economic costs for the EU. For example, the dynamic CGE model in the EU impact assessment shows how the negative GDP results at least double.

These results are due to Europe's over-reliance on exports. As demand contracts in the rest of the world, the EU industry is left worse off than if the EU was alone pursuing climate goals. A simpleton will deliberately misunderstand this conclusion as an economist's plea for the EU to go alone. Nothing can be further from the truth. EU alone cannot solve the climate crisis, and "EU alone" means a failure of the Paris Accord. Instead, the results explain the short-term incentives of the major EU industries (driven by minimising foreign competition), wherein exports form a much larger economic problem: The German economic model will not be future-proof.

The EU economy exports too much relative to its size, with a quarter of EU-wide GDP derived from sales in non-EU markets.[15] At a time when many accuse China of exporting "too much", EU exports even more than China. Germany, Central Europe, Scandinavia and Benelux typically draw 50% or more of their GDP from exporting, and export production also accounts for more than 15% of EU GHG emissions.[16]

[15] Based on Eurostat data for GDP and non-EU exports

[16] OECD Statistics, 2020

An economy that relies on exports also suppresses investments. If a carbon-neutral economy leads to lower exports, it also has a positive effect on EU investments according to the impact assessment. This is all consistent with economic theory: Overreliance on exports lead to lower investments – and those investments could have been directed towards decarbonisation. The export-to-GDP ratios for other large, high-value adding economies are much lower than for the EU: They usually fluctuate at a much lower level, around 12-16% in the case of Japan or the United States.[17] These countries have already graduated to an investment and consumption-driven growth. Their modern multinationals rely on FDIs to tap into faster growth overseas, not by shipping crates on aeroplanes.

Decarbonisation would modernise our economy closer in line with other advanced and diversified economies. However, it will not happen without a costly transition: the EU impact assessment correctly concludes that EU exporters will reduce their workforces to depress GDP and private consumption further. But the harsh reality is that export-led growth is not an option for the coming decade, as the macroeconomic fundamentals for such a growth model are largely absent in the global economy.

In conclusion, a European Green Deal is not necessarily a protectionist construct. Policymakers come to terms with the unavoidable that it is a catalyst for a rebalancing of the northern European growth model – a reform that most economists argue is long overdue anyway – and simultaneously adjust their business models for a carbon-neutral society. This double-transformation calls for a much broader policy response than just putting up a few carbon tariffs, and may also include restructuring "extreme exporters" (and sectors like automobiles, machinery or agriculture), and designing right mechanisms to attract FDIs into Europe and international tax principles that allow Europe to repatriate overseas profits back into our tax systems.

6. GREEN ON GEOPOLITICS

Those are some of the economic aspects of Europe's Green Deal. But decarbonisation also has a geopolitical dimension given Europe's position as a net importer of energy – and the vulnerability that entails. The models assert that the total energy system costs (including carbon pricing payments) will reach 12% of EU GDP, by switching to mostly domestic renewables and penalising imported biofuels, coal, natural gas and oil from the market by making them commercially unviable through pricing or regulatory mechanisms.

Energy supply diversification lies at the heart of European security and political autonomy against some powers. The gravity of this dependency is exacerbated by the concentration on a few state-owned actors from Russia that supply more than one-third of our crude oil and natural gas. Dependence on imported energy is currently at 55% of gross EU energy consumption, which will remain unchanged by 2030 reductions. However, if carbon neutrality is achieved, fossil fuel imports will shrink dramatically, virtually disappearing for coal, and decreasing by 67% to 80% for gas and oil.

Energy diversification has an important by-product, namely EU strategic autonomy. It may even go as far as diminishing Russia's overall importance on the world stage: Russia's relevance depends by and large on its ability to effortlessly create problems for the European powers. Thus, carbon neutrality will expand EU policy space vis-à-vis Russia in a manner we cannot fully predict beyond Nord Stream-2. The Kremlin will inevitably seek to retain its relevance and policy space too. Russia is exploiting the fact that the Baltic power systems still lack adequate electricity

[17] World Bank, World Development Index, 2020

connections between themselves and other parts of the EU. In recent years, Russia has successfully connected the power systems of Estonia, Latvia and Lithuania to a synchronous grid with the Integrated/Unified Power System (IPS/UPS) of Russia and Belarus.[18]

But our energy dependency is not just relevant for our interplay with Russia. Our renewable energy strategy has affected our relations with the Association of Southeast Asian Nations (ASEAN), and EU policy on biofuels was a substantial impediment to improving relations. When the EU effectively removed palm oil as a viable biofuel feedstock from the EU market, it was seen as an illegal act of discrimination by Indonesia, the region's latest emerging superpower. Decarbonisation has soured the relations with ASEAN, a regional group that is one of the world's primary source of economic growth, and intensely courted by China.

In addition to the two WTO disputes filed by Indonesia and Malaysia, the "strategic partnership" between ASEAN and the EU was delayed for two years before it was signed,[19] highlighting some divisions for developing the relationship. Purchase orders (aircraft in Malaysia, radar infrastructure in Indonesia) have been used as leverage. Politically speaking, the commercial disputes over discrimination will lose their relevance in due course as there is a complete ban on biofuels starting in 2030. However, if there is a political agreement to extend the lifeline on biofuels on domestic crops while phasing out foreign ones, the conflict will continue to impinge on Europe's entry ticket to playing a strategic role in South-East Asia.

In the background, we are also looking at one of the most pivotal decisions for Europe's foreign policy, namely its newfound systemic rivalry with China. As a net importer of energy, China's position is similar to Europe's. Unlike the EU-Russia relationship, climate change does not substantially change Europe's equation on China – as long as Beijing upholds its pledge to be carbon neutral by 2060. Nevertheless, to incentivise China to "lock-in" its climate commitments and to resist the temptation to exploit its energy cost advantage in order outcompete western competition in third markets, is going to be a formidable challenge, even for Europe's battalion of world-class trade negotiators.

There are indirect implications, regardless. European mobile telecom infrastructure was partly built by Chinese companies like Huawei and ZTE – and their future participation in 5G was actively discouraged by the United States and other NATO members. As 5G consumes far more energy than previous generations of mobile networks, its deployment will substantially increase GHG emission,[20] by an amount that is equivalent to 3% of national GHG emissions.

At present, EU telecom operators are keen to develop affordable alternatives to Nordic and Korean 5G manufacturers, which could come from an alternative technology called "Open RAN" that is built with inexpensive PC components.[21]. However, Open RAN also increases the energy consumption considerably compared with conventional technology. This example shows how easily the EU climate ambitions can be derailed. Even as the European Green Deal decreases GHG emissions by an additional 8%,[22] a simple supplier choice in the telecom sector is sufficient to derail the whole initiative by increasing the total EU GHG emissions again by 4-5%.

[18] EU JRC, The Baltic Power System Between East and West Interconnections, 2016

[19] EU EEAS, An EU-ASEAN Strategic Partnership, 2020

[20] Haut Conseil pour le Climat, Maitriser l'impact carbone de la 5G, 2020

[21] Jones, Power Consumption: 5G Basestations are hungry, hungry hippos, Light Reading, 2019

[22] supra note 6

7. CONCLUSIONS

The basic premise of the European Green Deal – namely "delinking resource use and economic growth" – is sound, albeit somewhat utopian. Industrial production does not take place in a vacuum. Even in a data-driven society – one that fully rewards the use of intangibles, entrepreneurship and creativity – energy and transport remain essential inputs. It is difficult to scope the full GDP impact due to undisclosed data, but CGE models are built on linear functions, and we can extrapolate an indicative ballpark: the cost of moving from today's equilibrium (in which GHG emissions have been already reduced by 20%),[23] to a 55% reduction should result in a 1% to 2.5% drop in GDP.

While the EU may achieve a carbon-neutral economy by 2050, it does not necessarily guarantee that the EU will survive the year 2051: Some paths towards the net-zero economy may also make the EU less politically stable, especially if it makes losers out of today's winners. Politically connected industries and regions will resist changes or demand to be bought off. At the very least, those who invested heavily in achieving economies of scale in manufacturing will see their comparative advantages forfeited or devalued. Whether the European Green Deal succeeds or not, also hinges on managing those stakeholders.

The European Green Deal forces a change in Europe's growth model, which may have been long overdue. Other economies must hold up their end of the bargain to meet the global targets on GHG reductions. At the same time, they must also keep their economies and their demand going – or it will add to the EU's economic burden. However, the best path towards net-zero for China, Japan, the United States, or the developing countries may not be identical to the EU approach. It is in Europe's self-interest to see beyond such superficial differences.

But a smart climate industrial policy does not just distribute investments and costs between stakeholders but also distributes them over time. By any account, investment needs are "front heavy" – they are needed now, so we may actually reap the productivity gains from them, before 2050. The rule of thumb in the energy sector is that it takes ten years for new technologies to be commercialised and another thirty years to be fully adopted, extending the total diffusion period to 40-50 years.[24] For some of our most promising line-up renewable technologies, we are looking at a full immersion by 2060 – and the fact that China has chosen 2060 as its target date for carbon neutrality is probably not a coincidence.[25]

High-school lessons in physics taught us how the total amount of energy in the Universe is constant, merely changing form. But unlike energy, the amount of capital in the EU is never constant. Energy is indestructible, while capital is relatively easy to destroy. EU public spending tends to create little multiplier effects, and often disappear as dividends for conglomerates in engineering, construction and infrastructure. This adds to the worry of how the gap between financing *needed* versus *available* is unprecedented. And our experience, data, and common sense all point to how the Green Deal hinges on the rapid mobilisation of investments for its success – and to reduce the overall cost of transition. EU response to climate change must not be distinguished by economic romanticism that is typical of policy planning of latter days, where policymakers freely exaggerate the impact that our limited action has on the future because they have already left office by 2030.

[23] Data from European Environment Agency, 2019

[24] Imai, 脱炭素社会への船出 期待と不安の中で, CIGS, 2021

[25] ibid.