



---

---

## RESEARCH PROGRAMME 2020-2021

## INTRODUCTION

This year's research programme comes at an important moment for the global economy: during its biggest recession since World War II that resulted from the Pandemic Covid 19 and the policy actions taken to contain it. And while "lockdown" measures are gradually eased, the uncertainty and variability of the health situation could well last for another year.

The social and economic consequences of the pandemic on European societies are far reaching – and so are the consequences on the global economy, global cooperation and societies far away. No country has been spared of the virus. The pandemic has also accelerated many underlying trends in the global system, calling for reinforced European (thought) leadership on many of the issues on which Bruegel has been a leading voice. How can Europe accelerate a sustainable recovery? How to strengthen European capital markets to allow for new funding to stressed companies? How should the European fiscal framework evolve? How to prevent a permanent drop in productivity growth? What are the consequences for the global trading and investment system? What are the implications for emerging markets? What should Europe's role be and which strategy should get it there? How to ensure that our societies become climate neutral and can this be achieved without a major drop in welfare? What is the future of work amidst the pandemic and far-reaching technological change? How should global institutions such as the G7, G20 and others evolve?

For the upcoming research year, substantial emphasis will be put on the implications of the pandemic, giving also rise to new research streams. For example, we have developed various real time indicators to assess the economic implications of the pandemic and the policy responses and aim to further develop those. We are exploring how Covid-19 is impacting the adoption of technologies across European firms and we are studying the financial system implications of Covid-19. One research stream will explore the global and European governance of the provisioning of a global public good: health with a focus on pandemic preparedness.

These new research streams imply a re-prioritisation of research activities but also reflect increased focus of research activities on many ongoing research projects that increase in relevance. The macroeconomics of the EU and monetary union, the EU's single market and European industrial policies, the European financial system as well as questions of the global trading system and trade and investment relations in Europe are some such things. Importantly, we will be looking to understanding how it all fits together to ensure consistency in policy choices at the EU and national level as well as staying faithful to long term sustainability objectives

*Guntram Wolff and Maria Demertzis, 25 August 2020*

## A: EUROPEAN MACROECONOMICS & GOVERNANCE

### A. Research Area: European macroeconomics and governance

Participants:

- *Scholars: Gregory Claeys, Zsolt Darvas, Maria Demertzis, Alicia Garcia-Herrero, Catarina Midões, Francesco Papadia, André Sapir, Jean Pisani-Ferry, Giuseppe Porcaro, Niclas Potiers, Reinhilde Veugelers, Thomas Wieser, Guntram Wolff, Jianwei Xu, Georg Zachmann*

The past year has been undoubtedly turbulent, with COVID-19 affecting all aspects of our lives and by extension the economy. This has resulted in a rapid succession of policy measures both at the EU and Member State level that warranted policy debate and additional assessment. The coming year will further include the negotiation of both the new MFF (2021-27) and the construction of 'Next Generation EU' recovery instrument. This has also reinvigorated debates over the future of the European Union, as well as more methodological questions on the value of real-time data and the flaws of popular economic indicators.

In the research programme of this year we will study trends in European macroeconomics and governance under six headings: 1. Macroeconomic implications of the pandemic; 2. The EU's fiscal and macroeconomic policies and governance change; 3. Raising EU productivity: Lessons from improved Micro Data; 4. Future of Europe (conference) and Europe's differentiated political order; 5. The role of wealth in social mobility; 6. Covid-19 and new research data.

### 1. Macroeconomic implications of the pandemic (A1)

The effects of the pandemic continue and there remain major uncertainties about the depth of the recession, as well as the speed and structure of the subsequent recovery. The severe economic shock depresses output and weakens the recovery via various supply and demand effects, such as corporate bankruptcies, disrupted supply chains, reduced investments, increase unemployment and inactivity, weakened productivity due to enhanced hygiene and social distancing measures, increase household savings and reduced external demand. The economic shock has also been differentiated across countries, regions and industries. This differentiation has important implications for economic policies. Important questions also concern the extent to which the shocks are primarily on the supply or on the demand side and to what extent the consequences are long-term or short-term.

In this work stream, empirical policy questions around the macroeconomics of the pandemic will be studied. The resilience of the EU's single market can also be considered here as it is of macroeconomic relevance. Also, to better understand the different policy reactions Bruegel scholars have developed and regularly update a dataset on national fiscal responses with a breakdown into three categories (immediate fiscal impulse, deferral, other

liquidity/guarantee measures). Moreover, the work will include assessing the post-pandemic role of Central Banks after these went even further looking for tools to combat the crisis. Last but not least, Bruegel scholars are also exploring the consequences for inequality of the pandemic, empirical work on the poverty and income-distribution effects of COVID-19. Obvious linkages to labour markets and the future of work exist and are explored here and in section D2.

## **2. The EU's fiscal and macroeconomic policies and governance change (A2)**

The unprecedented economic circumstances arising from the crisis have led to a rapid succession of policy measures by the EU institutions. These include suspension of European state aid and fiscal rules, the creation of the temporary Support to mitigate Unemployment Risks in an Emergency (SURE), boosting the European Investment Bank's capacity, creating a new pandemic credit line from the European Stability Mechanism (ESM), while the European Central Bank adopted wide-ranging measures. The EU's 2021-2027 MFF proposal and the proposed 'Next Generation EU' recovery instrument remain to be ratified. The European Semester process should deliver country-specific recommendations in July. The Covid-19 crisis brings about also significant fiscal revenue implications.

The project will evaluate EU and euro-area wide fiscal and macroeconomic instruments and policy measures, and simultaneously drive the ongoing debate on new measures with a particular focus on both, the best macroeconomic response to accelerate the recovery in a sustainable way and the governance of the EU and the monetary union in particular. As most EU countries will eventually be placed under an excessive deficit procedure, Bruegel scholars will study national fiscal policy options under such circumstances and the desirable pace of fiscal consolidation in contrast to what fiscal rules permit. They will also explore inconsistency and trade-offs related to long-term investment goals and consolidation attempts. One key question concerns the complementarities between national fiscal policies and the new EU instruments.

More broadly, the pandemic has raised questions about the set-up of monetary union. What joint fiscal policy instrument are necessary, how effectively are they, how should they be developed and how to deal with possible moral hazard questions. How to ensure an optimal coordination between monetary and fiscal policies? What are the implications of strong central bank intervention for independence? The relation between national sovereignty, shared responsibilities and alignment of tasks to EU institutions? Beyond the immediate crisis measures, what are the long-term governance changes that are desirable (own resources, governance, legitimacy etc.)?

## **3. Raising EU productivity: Lessons from improved Micro Data (A3)**

Bruegel is part of the Microprod consortium funded by the European Commission's H2020 financing. The project will examine the empirical observation that productivity growth in the developed world has slowed down in the past decade despite both technological

innovations continuing. The objective of the project is to provide explanations to this puzzle, improving our understanding of productivity and its drivers in general as well as the way that we measure it.

#### **4. Future of Europe (conference) and Europe's differentiated political order (A4)**

The pandemic initially delayed discussions on the "Future of Europe Conference" and highlighted EU unpreparedness given its lack of competences in health matters. It has also imbued the debate with renewed energy and dynamism.

In this project, Bruegel will critically accompany the process of the "Future of Europe conference" with events and podcasts and possibly also policy notes. Bruegel scholars will interact with think tankers and academics throughout Europe, including with virtual debates. In particular, the project will explore questions of transparency, accountability, differentiation, subsidiarity and legitimacy in the governance set up of the EU and the euro area in particular.

Bruegel scholars will further contribute to a Horizon 2020 project that investigates the increasingly differentiated European political order, in a partnership that includes political scientists, lawyers and sociologists.

#### **5. The role of wealth in social mobility (A5)**

Initial analysis would indicate that the pandemic is enhancing inequality throughout Europe, enhancing the importance of exploring this. Wealth, or the lack of it, has major implications for opportunities. Parental wealth helps the achievements of descendants via numerous channels, such as education, health, occupational choices, business and social connections, investment opportunities and gifts and inheritances.

In a project funded by Eurofund, Bruegel scholars are using household-level data from the European Central Bank's Household Finance and Consumption Survey (HFCS) and the Survey of Health, Ageing and Retirement in Europe (SHARE), to estimate the impact of parental background, including parental wealth, on educational and wealth mobility in a large number of European countries. This includes exploring the reasons behind cross-country differences in the role of wealth in social mobility and discussing policy options to enhance the opportunities of children and youth born in less-wealthy families. An external Eurofund report will present these findings, which will further be explored in several internal Bruegel publications.

#### **6. Covid-19 and new research data (A6)**

The pandemic has highlighted the need for better real-time data, especially in extraordinary situations such as the current one. Research institutes across Europe have made attempts to develop new measures of tracking the impact of Covid19 in real time. However, to our

knowledge, no coordination of the data collection exercises across Europe has been undertaken, neither by official EU institutions nor research institutes. Bruegel will organise a workshop that brings together relevant players and explore developing a data platform.

One good example of the above has been Bruegel's electricity tracker tool. Since the beginning of the COVID-19 crisis it has gauged the impact of this crisis on economic activity by tracking changes in electricity consumption. The measure has attracted a lot of attention and will be developed further. One possibility currently explored is whether satellite data can be used to increase the geographical scope of the data base that already includes non-EU countries.

One use Bruegel will give this tracker pertains mobility restrictions. The project will quantify these restrictions, aiming to create a daily mobility policy index (starting in Wuhan in January). The Google mobility index will then be used, complemented by other measures if Google is not available (e.g. China) to assess the economic effect of mobility restrictions. The daily electricity data will then be used to gauge the economic impact of these restrictions. This captures the activity level of production and avoids the time lags associated with other economic indicators. The daily sentiment data measured by big-data analysis using the GDELT global news database will also be employed as an additional proxy for economic performance.

## **B: GLOBAL ECONOMICS & GOVERNANCE**

### **B. Research Area: Global economics and governance**

Participants:

- *Scholars: Suman Bery, Marek Dabrowski, Uri Dadush, Maria Demertzis, Alicia Garcia-Herrero, Henrik Horn, Michael Leigh, Jean Pisani-Ferry, Georgios Petropoulos, Niclas Poitiers, André Sapir, Simone Tagliapietra, Nicolas Véron, Guntram Wolff, Jianwei Xu*

The COVID crisis has resulted in a collapse in both trade and investment; its global effects will be particularly pertinent in emerging markets, while the performance of the Chinese economy remains plagued in uncertainty. In this context, new partnerships deserve further exploration, while long-standing issues such as European enlargement remain pertinent.

In the research programme of this year we will study trends in global trends in economics and governance under seven headings: 1. Europe's strategic position in the world; 2. Neighbourhood policy and EU enlargement; 3. Europe and India: managing turmoil together; 4. European trade and investment policy in times of crisis; 5. The Chinese economy; 6. Emerging markets and COVID 19; 7. Perceptions of the EU in the Asia-Pacific area and perceptions of this region inside the EU.

#### **1. Europe's strategic position in the world (B1)**

The pandemic may well have accelerated geopolitical trends that preceded it. In this ongoing work-stream on geoeconomics, Bruegel scholars will analyse Europe's strategic position, how the pandemic is affecting it, the options and the necessary trade-offs. The work builds on previous work on economic sovereignty, autonomy and/or independence, trade policy and investment screening as well as analysis of EU-China relations. It further relates to prior research on the transatlantic relation as well as the G20 processes. One concrete and ongoing project focuses on the geopolitics of the Green Deal.

#### **2. Neighbourhood policy and EU enlargement (B2)**

Accession negotiations for candidate countries have largely failed to move ahead in recent years. The project would examine obstacles (political, economic, geopolitical, perceptions, public opinion) to advancing the accession negotiations and ways to overcome them. It will focus on the countries of the Western Balkans and Turkey, considering the impact of Covid-19 on the process.

Beyond the accession discussion, the project will also explore other forms of collaboration with the neighbourhood. The impact of geopolitical developments especially in the Middle East and North Africa on Turkey's relations with the EU will be included in the analysis. Research will be based on media analysis, polls, collaborations, EU reports, interviews,

statistical analysis, etc. Beyond internal publications (blogs and policy contribution), joint events with think tanks and foundations in the EU, the Western Balkans and Turkey.

### **3. Europe, India and the Asia Pacific: managing turmoil together (B3)**

Originally planned for March 2020, Bruegel will revive a workshop originally scheduled for March 2020 in New Delhi, in partnership with the Centre for Policy Research and the India International Centre, for Indian and European scholars to share perspectives on challenges in global governance: trade; digital; climate; finance and sustainable infrastructure.

Since then the COVID pandemic; military tension (including loss of life for the first time) on the Sino-Indian border and the rotation of the G20 Presidency to Italy for 2021, to be followed by India have changed. An additional event of consequence would be the US Presidential election in November. These developments argue for a more expansive approach to the rescheduled event, with a more direct link to the priorities of the successive presidencies of Italy and India. This reformulation may entail partnership with think-tanks from member states (Italy, France, Germany) and even a shift in location to Brussels. The policy relevance could extend to supporting a dialogue between Italy, India and Brussels on priorities for the G20 in a radically changed global economic environment. The Conference would take place in the first quarter of 2021, with a series of reports, policy briefs and podcasts produced around it.

A further project will explore perceptions of the EU in the Asia-Pacific region. The project will be conducted in cooperation with the National Centre for Research on Europe (NCRE) of the University of Canterbury, in Christchurch, New Zealand, based on data from newspapers, social media and practitioner interviews, Eurobarometer and other sources. Data on two-sided perceptions will be analysed. A policy dialogue is expected, as well as joint events and seminars and Bruegel publications, elaborating recommendations for EU institutions.

### **4. European trade and investment policy in times of crisis (B4)**

The project seeks to develop strategies for the EU to strengthen the rules based international economic order and increase European economic sovereignty in the free flow of data, goods, services and capital and without undermining the multilateral system or competition policy. It will look at industrial policy and trade and investment screening mechanisms, and assess their effectiveness in reducing over-reliance and one-sided dependencies, further assessing the risk of such policies on competition and free trade. The goal of this project is to develop strategies that reduce risks posed by the potential decline of the rules based multilateral order, for example due to trade wars, while mitigating the negative effects on global and local competition. In the framework of this project, we will also critically accompany the negotiations of the future relationship with the United Kingdom after Brexit. Special attention will further be place on medical supply chains in the context of COVID-19 in a report to the Italian G20 presidency on supply chains in medical goods.



Last but not least, the topic of carbon border adjustment is set to take a prominent role during 2021 and Bruegel scholars will build on their extensive work in this area.

## **5. The Chinese economy (B5)**

The Chinese economy has been on a decelerating trajectory since 2010, evident in the pattern of China's exports. To lift the sustainability of economic growth, China has embarked on Manufacturing 2025 to fulfil its transition towards a quality-based growth model. Quantitative assessment shows expectations have been exceeded. China has over-performed in most of the pre-determined targets, i.e. R&D expenditure and patents, all except the industrial value-added ratio (no increase). Yet, China's productivity growth continues to slow down. The project explores this further and will have a special focus on the ICT sector.

A second project explores the concept of competitive neutrality. The EU shares many US concerns about China, relevant in upcoming negotiations on a bilateral investment treaty (BIT). The concept of competitive neutrality (that state-owned and private businesses compete on a level playing field) is increasingly important. Although the OECD provides guidance for policy makers, it does not address a core problem of how to measure and compare. China has borrowed the concept from the OECD and argues that they are increasingly close to applying competitive neutrality among companies operating in China. But the role of SOEs in the Chinese economy is different from the rest of the world given their particular nature. The lack of measurable definition and indicator remains a problem.

## **6. Emerging markets and COVID 19 (B6)**

Capital outflows from emerging economies has been much faster and substantial than at the onset of the 2008 global financial crisis. This can cause a significant drop in economic activity, dragged by the lack of financing for consumers and businesses, with recoveries that can take up to several years to complete.

The situation raises strong macroeconomic questions as to balance of payment financing difficulties as well as longer-term solvency question, in particular but not only in Sub-Saharan African countries. Creditors recently engaged in actions to bring some relief to poor and highly indebted countries. This time around, coordination problems among creditors may be more likely than in the past given China's increasingly relevant role as private and official creditor. The project lays out options for Europe as creditor.

When it comes to liquidity issues, the euro has been the currency of choice for an increasing number of off-shore bonds issued by emerging economies (dwarfed by the dollar). This project looks into the situation of the offshore Eurobond market as a potential stress point for offshore euro dollar liquidity and investigates the access to emergency liquidity in euro. Lessons are offered to the ECB based on Fed experience, and scope for coordination with the Fed and the role of the IMF explored.

Finally, one project will explore policy options for central banks in emerging markets. How aggressive can and should their response be without jeopardizing financial stability? Are unconventional policy instruments such as “helicopter money” useful?

## **7. Global and European health governance**

The pandemic has certainly raised major questions on global and European health governance with obvious links also to research area A4. In Europe, the initial health responses were largely national, raising troubling questions about how the integrated travel area can manage pandemics in the future. Globally, the pandemic has given rise to major tensions around global health management with major implications for the stability of the global economy. The project definition for this research stream is still at an early stage.

## C: FINANCE & FINANCIAL REGULATION

### C. Research Area: Finance and Financial Regulation

Participants:

- *Scholars: Julia Anderson, Rebecca Christie, Maria Demertzis, Alicia Garcia-Herrero, Alexander Lehmann, Emmanuel Murlon-Druol, Francesco Papadia, André Sapir, Dirk Schoenmaker, Reinhilde Veugelers, Nicolas Véron, Thomas Wieser, Guntram Wolff, Stavros Zenios*

The pandemic has placed substantial stress on the financial systems, and its structures deserve additional attention. Substantial questions may arise as regards possible systemic banking system weaknesses, overbanking and restructuring, market-based financial intermediation and the development of European capital markets post Brexit. Meanwhile, the Chinese banking system continues to grow and is beginning to become a global competitor, even if some of its inherent weaknesses remain. Finally, sustainable finance is gaining importance in the debate, both in the context of the climate crisis but also more broadly. Financial literacy has also become more relevant, as COVID-19 has exposed underlying household fragility.

In the research programme of this year we will study trends in finance and financial regulation under four headings: 1. EU financial-sector impact of the COVID-19 pandemic; 2. Pursuing Sustainable Finance; 3. European and Global Financial System Structures; 4. The Chinese banking system: potential consequences for Europe.

#### 1. EU financial-sector impact of the COVID-19 pandemic (C1)

The COVID-19 pandemic represents a major stress on the EU financial system. In this project, Bruegel will monitor financial sector developments and public policy responses, and make relevant policy recommendations in a timely manner.

Several areas to be explored include how to tackle NPLs (and the possible creation of a European Asset Management Company), the case for more market finance, completing Europe's Banking Union (by improving the resolution framework and introducing the third pillar of deposit insurance) and replenishing Europe's corporate equity. Question on the interaction between technology and regulation with the impact of the pandemic on the sector will be naturally part of the project.

#### 2. Pursuing Sustainable Finance (C2)

Climate change and finance are interconnected areas. The EU has an opportunity to shape the global market of Green bonds, where it is already a leader. One project will be a comprehensive scoping of the issues that link climate change to the sovereign debt markets, discussing the possible methodological framework needed for assessment. The

project will explore the quantification of climate risk in sovereign debt markets in Europe. Bruegel aims to develop stress test analysis for European sovereigns, assessing the implications for the debt limits in the SGP, maturity profiles, and sovereign green bonds.

An additional area to be explored further pertains financial literacy, in a world in which financial services are increasingly provided digitally. In partnership with the GFLEC, the global leader on financial literacy research, Bruegel will explore the risks of digital payments in the absence of financially literate consumers. Are consumers vulnerable to lowering the accessibility threshold to making payments? Does financial literacy help reduce these risks? The project will explore these questions through specially designed surveys to replicate this research done in the context of US millennials.

### **3. European and Global Financial System Structures (C3)**

Understanding the structural features of financial systems is key to good policy development. This effort takes particular significance in a time of fast structural changes, such as EU financial integration and the possibility of financial deglobalization. This project will aim at shedding light on neglected aspects of this area, with a predominantly descriptive intent but also awareness of policy implications, with a paper on banking sectors and a second one on global banking M&A. Specifically, the project includes (but is not limited to) the analysis of a unique database of the world's larger banks since the late 1960s, built on the basis of regular rankings by The Banker magazine.

Over the past decade, the Chinese banking system has grown even faster than the Chinese economy and assets of domestic banks are already bigger than those of European ones. China's financial health deteriorated after the credit binge in 2008 and stock market collapse and deflationary pressures in 2015. Since then, the Chinese banking system has undergone a transformation which included a partial clean-up of bad assets and the modernization of its banking sector. In addition, it has also continued to open up. Europe is net creditor to the world, and therefore expansion of Chinese banks overseas will mean more competition. There are important implications for European banks' operations overseas as the Chinese banking system changes.

## D: RESEARCH AREA: INNOVATION & COMPETITION

### D. Research Area: Innovation and Competition

Participants:

- *Scholars: J. Scott Marcus, Georgios Petropoulos, Niclas Poitiers, Reinhilde Veugelers, Guntram Wolff, incoming scholar*

Technology adoption in the current crisis could play an important role in our recovery and the question of the right mix between industrial policies, single market policies and competition policy has taken on new significance. Meanwhile, long-standing issues such as geo-blocking within the digital single market and international data transfers continue to deserve an extended policy debate. Finally, Bruegel is embarking on a three-year project on the future of work within the gig economy and how to ensure inclusivity.

In the research programme of this year we will study trends in innovation and competition under five headings: 1. COVID-19 impacts on digital technology adoption; 2. Digital Platforms, Regulation and Competition Policy; 3. AI, robots and the future of workers and the welfare state; 4. The EU Single (digital) Market; 5. Data usage and international data transfers.

#### 1. COVID-19, European industrial and competition policy and digital technology (D1)

It will be necessary to substantially re-tool European industry and commerce in order to respond to multiple challenges, including (1) the need to recover from the COVID-19 crisis, which has impacted different sectors in different ways, (2) the need for strategic autonomy in key value chains in the face of a rising China and a possibly unpredictable United States, (3) the increased focus on green and sustainable development, and (4) the need to modernise and digitalise European society. This cluster of projects seeks to provide an integrated “big picture” view of EU industrial and competition policy needs going forward by looking at the various projects on

- competition and state aid control
- Impact of the COVID-19 pandemic on digital technology adoption
- Digital Platforms, Regulation and Competition Policy
- The Single Market and the coming Digital Services Act
- Disruptive innovation and cyber risks

#### 2. AI, robots and the future of workers and the welfare state (D2)

A three-year endeavour financed by the Mastercard Centre for Inclusive Growth grant, the project aims at creating a research stream as well as network on Building an Inclusive Economy: Workers and the Digital Future in Europe. It will explore questions such as AI and its distributional effects, the “gig economy”, the impact of AI, the emergence of the data economy, the impact of rising technology, Innovation and data policy and the resulting policy challenges and solutions for Europe. In the framework of the project, a European network of researchers will be created and funding for surveys and conferences is also available.

### **3. Data usage and international data transfers (D3)**

Data access drives the digital economy, but international usage and especially international transfers often confront actual or potential barriers due to differing legal and institutional arrangements in different parts of the world. Much of what has been published on these themes to date reflects the narrow perspective of a single country or region. In order to enable a balanced and truly international exposition, a group of experts has already been assembled from multiple institutions in China, Japan, and the United States. Bruegel will be the European partner. The aim is to produce an ebook. Another detailed report on digital trade questions will be written for the European Parliament.

## **E: RESEARCH AREA: ENERGY & CLIMATE**

### **E. Research Area: Energy and Climate**

Participants:

- *Scholars: Jean Pisani-Ferry, André Sapir, Simone Tagliapietra, Reinhilde Veugelers, Guntram B. Wolff, Georg Zachmann*

The Green Deal remains a top priority for the EU Commission, with important economic, societal and even geopolitical implications. The recovery further provides an opportunity to revitalise and green European industry with an EU Green Industrial policy. Its success will be crucial to a transition that is socially accepted in the long-run.

In the research programme of this year we will study trends in energy and climate under five headings: 1. Observatory on the European Green Deal; 2. Developing an EU Green Industrial Policy: Getting the Economic Fundamentals Right; 3. Science-policy interface in energy and climate economics; 4. Economics of new energy vectors: hydrogen and sector coupling economics.

#### **1. Observatory on the European Green Deal (E1)**

The European Green Deal remains a signature Commission policy, thus Bruegel scholars will keep track of its evolution and provide timely research analysis and insights. Particular attention will be devoted to the political economy aspects related to the initiative, such as the issues of just transition, distributional effects of climate policy, green investments and carbon pricing. How to find the most cost-effective solutions and approaches to decarbonising? It will be important to explore the role of clean hydrogen solutions and how the EU market of hydrogen could be organised

Moreover, the project will analyse key climate policies and recommend different strategies. It will also debate major developments in (online) seminars and explore questions on the “greening” of the recovery.

#### **2. Developing an EU Green Industrial Policy: Getting the Economic Fundamentals Right (E2)**

To be politically and socially accepted and supported in the long-run, the European Green Deal must turn decarbonisation into an opportunity to revitalise the European industry, ensuring economic growth and jobs. Such recognition underpins a strong quest for a green industrial policy at the EU level. Yet what could constitute green industrial policy and which market failures should it address? What can we learn from past green industrial policy cases in Europe and globally? How can we ensure that this industrial policy achieves structural change and while also locking-in low-carbon pathways for development? How should

different starting points be incorporated in the common strategy? Having such a conceptual framework clear represents a fundamental prerequisite to inform policy discussions in the field. This project aims to develop such framework, and to tackle the existential questions underpinning the development of an EU green industrial policy, exploring how it should be structured between EU and national levels.

### **3. Science-policy interface in energy and climate economics (E3)**

Energy and climate policy has arguably grown in the political and scientific discourse. This is driven by a large and dynamic set of actors – involving different scientific disciplines, different policy areas and a diverse group of often very engaged stakeholders. Better understanding the social networks that organise the knowledge flow can help to better target corresponding scientific resources.

This project aims to analyse these social networks of academics, policy-makers and intermediaries in the energy and climate policy area. It will be carried out within the context of the H2020 Paris Reinforce consortium.

### **4. Economics of new energy vectors: hydrogen and sector coupling economics (E4)**

Full decarbonisation can become significantly cheaper when cheap low carbon energy resources can be used more efficiently and versatile. Ensuring that low carbon electricity or hydrogen can be transferred more easily between an increasing number of end-uses has potentially significant efficiency potential. Existing energy systems (like district heating, transport fuel, electricity, or gas) are already very complex - coupling them and adding another hydrogen system that allows new interactions will amplify this complexity.

In this context, the project would analyse in which ways new energy vectors – like hydrogen and sector coupling - can impact the energy system and how these interactions can be translated into large energy (and climate) models. Our results will enable to better understand which new interactions might emerge and where policy is needed to unleash efficiency potential. This is crucial input into the European decarbonisation debate. A key contribution Bruegel scholars can make is to analyse how the many national initiatives can be aligned to create a sensible European approach.