Summary report of the 4th GLORIA virtual workshop Capturing the progress of industrial innovation efforts towards competitive sustainability

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INTRODUCTION AND BACKGROUND

This workshop was organised as part of the **Global Research & Innovation Analyses[4]** (GLORIA) project undertaken jointly between the Commission's Joint Research Centre and the Directorate General for Research & Innovation (R&I). **GLORIA workshops** are held in order to discuss policy-relevant issues addressed in the analytical work of this project[5] and obtain feedback from different stakeholders from academics, policymakers, and industrialists about the relevance of the results and analysis obtained in the GLORIA activities and their policy implications. Up to now, twelve workshops have been held.[6]

The European Green Deal[7] marks the way forward, with a more ambitious European Union's emission reduction target for 2030 towards 55% and climate neutrality 2050. As such, the Green Deal will have a significant impact on the R&I activities of European industry. Investment in R&D and CAPEX is key to achieve these objectives. The Sustainable Finance Package shall trigger €1 trillion investment over the next decade.[8] The upcoming renewed sustainable finance strategy,[9] and the EU taxonomy on sustainable finance[10] will strengthen the foundations for sustainable investment by creating an enabling framework and include sustainability principles in the financial and corporate sectors.

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[3] The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission
[4] See: http://iri.jrc.ec.europa.eu/home/. The activity is undertaken jointly by the Directorate General for Research and Innovation (DG RTD.E; see: https://ec.europa.eu/info/research-and-innovation_en) and the Joint Research Centre, Directorate B Growth & Innovation (JRC-B; see: https://ec.europa.eu/jrc/en/science-area/innovation-and-growth).
[5] See: https://iri.jrc.ec.europa.eu/scoreboard/2019-eu-industrial-rd-investment-scoreboard
[6] See: https://iri.jrc.ec.europa.eu/events
[7] COM(2019) 640 final
[8] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en
[9] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12635-Renewed-sustainable-finance-strategy
[10] https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en

The European Commission's industrial strategy[11] aims to ensure competitiveness on the global stage via investments in Strategic Value Chains and Industrial Ecosystems – e.g. batteries and bio-based products – and new forms of collaboration with industry for ensuring Europe's strategic autonomy and technological leadership.

The European Research Area[12] will continue to incentivise R&D investment from the private sector. This is also emphasised in the roadmap[13] that aims to revitalise ERA underlining the importance of a transformative R&I policy that shapes technological and societal change to deliver a sustainable European society.

Implementing this new policy context requires a better understanding about the extent current industrial innovation efforts will realise the EU objectives of competitive sustainability. The future Scoreboards will thus incorporate additional relevant information and indicators, to monitor and analyse progress and in particular to identify areas where policy intervention might be needed to further incentivise R&I investments from relevant industries. This GLORIA workshop focussed on capturing the progress of industrial innovation efforts towards competitive sustainability. A detailed concept note and agenda is attached in the Annex, together with the profiles of the presenters.

The virtual workshop was by invitation only, and held in two virtual morning sessions just days after the adoption of the first delegated act of the EU taxonomy on sustainable finance and before the adoption of the second one planned for June. The deployment of the taxonomy promoted interactive discussion and in-depth work in focus groups among the participants:

Day 1: Policy background, keynote speech and industry session

Day 2: Finance/NGO/standard setters session and policy roundtable

The workshop concluded with the identification of main data and information gaps and possible ways forward to tackle these needs.

The main discussion topics were:

- EU Scoreboard as a tool to complement the EU taxonomy? EU and global R&I competitiveness issues? Which additional indicators could provide insight to the stakeholder needs?
- How do companies measure sustainability? To what extent do they report on sustainability? How is industry preparing for the EU taxonomy?

[11] https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

[12] https://ec.europa.eu/info/news/era-communication-sets-pace-efficient-uptake-research-and-innovation-results-2020-sep-30_en

[13] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12495-Communication-on-the-future-of-research-and-innovation-and-the-European-Research-Area

- How do financial actors measure sustainability of firms? What role in selecting their portfolio? How does the EU taxonomy contribute to this? What is measured beyond?
- How do NGOs, data collectors and institutions measure sustainability of companies? How can the EU taxonomy be an added value? What can we learn from current data availability?
- Can answering the questions above facilitate access to finance for innovation? Which data are missing and could (or not) be collected? What are the barriers to be overcome?
- What will not be covered by the taxonomy and how incentivize the companies to report on it? What can the European Commission do? Lessons for the R&I policy agenda and the R&D Scoreboards?
- Validation of 2020 EU R&D Scoreboard SDG chapter?

Opening Session Day 1: Policy Background and Keynote Speech

Messrs. **Peter Dröll** (Director Prosperity, DG R&I.E) and **Mikel Landabaso** (Director Growth & Innovation, JRC.B) opened the workshop outlining the need for re-launching the economy, combined with the need for green and digital transformation as main policy objectives, and a wider support of EU technological leadership, strategic autonomy and foresight perspectives.

The keynote speech by **Reinhilde Veugelers** (KU Leuven/Bruegel) introduced elements for a green industrial policy for Europe. Such policy needs to turn decarbonisation into an opportunity (Green Deal), based on many instruments at different governance levels, a new policy mix. This combines climate and industrial (innovation) policies into competitive sustainability, where the EU has important instruments, but we need to know also the effect of investments in non-green (traditional) sectors. She highlighted the importance of mainstreaming these new policies, so coordination of different stakeholders and citizen involvement is key o in the recovery from the COVID-19 induced recession. The transformative character of policies is needed to produce a long-term approach, enabling experimentation (failure) and learning and adjusting via honest evaluation/simulation, with the need for suitable indicators for monitoring. In addition, the importance of public-private partnerships (including missions and alliances) and ecosystems (regional dimension) for transformation was stressed. Here, multidimensionality (beyond Climate Change e.g. biodiversity) is critical to capture interdependencies towards enabling these public-private partnerships. On a positive note, the EU has a multitude of policy initiatives on different geographical layers and competencies, which however need coordination and policy governance to ensure the necessary directionality. This is closely linked with a need for better understanding the green vs the industrial contributions to ensure single market scale and a level playing field in the global competitiveness context. Among the framework conditions, competition laws addressing state aid, antitrust and merger review all have a

role in facilitating the necessary R&D collaboration, to avoid squeezing small companies out of the market and ensuring M&A does not involve "killer acquisitions".

Doris Schröcker (Head of Unit Industrial Research, Innovation & Investment Agendas, DG-R&I E.1) addressed the importance of the Green Deal and the challenges of monitoring the efforts of its implementation. Here, the EU industrial base needs to be strong enough to consider the green transformation as opportunity. The challenge is how to make investment targets operational and engage stakeholders, finding those stakeholders that should take action, and helping with financial support for R&I where there are gaps and additionality. Such is the objective of the Industrial Technology R&I Roadmaps, where collecting evidence is highly challenging.

Session 1: "Being Green": Monitoring Sustainable R&D Efforts – Lessons from Industry

Antoine March (Covalence) and **Sara Amoroso** (JRC) showed the results of study at the firm-level on SDG-related disclosure and reputation scores which was piloted in the 2020 EU Industrial R&D Investment Scoreboard. It shows that EU firms are leading in SDG performance, and ICT ones lag when compared to chemicals and transport score high (maybe due to regulation). The reputation scores help to understand a broader set of dimensions as needed by the SDG context, and its contrast with Environmental, Social and Governance (ESG) disclosure scores helps to objectivise these via more detailed quantitative metrics

Keeran Gwilliam-Beeharee (Vigeo/Eiris, hereafter VE) and Jan Notadaerme (CSR Europe) European Industry Federation (ISIF) presented scores calculated alongside V.E's existing ESG and Climate scores for European sectors and Industry federations. They also show EU strength and the potential to use industry federations to involve SMEs and small firms. They expect the first results to be available in October 2021.

Fabrice Stassin (Umicore), an €11 bn turnover refinery and recycling company, presented a company example of green transformation. Starting from clear market demand for batteries, he explained the shortening of value chains (also due to the COVID-19 pandemic) and thus the need to build local circular ecosystems close to customers. He mentioned two policy levers which are important and very much appreciated by: EU battery alliance and IPCEIs. It seemed helpful that the industry follows a clear technology roadmap towards increasing the energy intensity of batteries with the full solid state battery as the next frontier. He outlined the company's strategy expanding its activity in recycling and how such efforts in EU are eco-efficient with minimum negative impact on the environment and society (this in contrast with other parts of the world). The recent acquisition of the second biggest Cobalt recycler outside China reduces the dependency on critical raw materials. He indicated that Umicore will maintain a very high R&D intensity, channelling a majority into the clean mobility segment.

Els van der Velde (IDEA Consult) presented the results of a study on Global Innovation Networks (GINs) of top R&D investors which addressed five Green Deal priority areas; energy, industry, mobility, hydrogen and batteries. This involved a process for the description and measurement of selected GINs and their R&D and economic competitiveness over time and relevant companies and stakeholders were interviewed. The results show these GINs are focused on Europe for the EU firms considered, and the size of the network varies with the number of stakeholders. These top R&D investors, which are large multinationals, are driving those GINs, and in turn offer and benefit from access to potential new markets, skills and partnerships (also to reduce risks, scaling-up and pilot lines). For the interviewed companies, the Green Deal was appreciated as a political signal to have a clear goal set, and which helps variously; energy companies to broaden their portfolios, materials companies to think more about recycling, or mobility companies to look at EV and decarbonisation (both of products and their own production process). The analysis also revealed batteries and hydrogen are key cross-cutting technologies and enablers for new green products, and especially large European automotive companies very active in all the related GINs.

José Luis Blasco (Acciona), an €8 billion infrastructure, renewable energy and water company, explained that they (as Umicore) start from clear market demand as incentive with infrastructure investment expected to double in the next decade. The company is a forerunner in integrating the sustainable finance taxonomy in its accounting practices and applying it as an internal strategic tool. He gave important insights for industry in how this can be achieved in practical terms and with reasonable efforts and employment of resources if the accounting and sustainability departments work together. The experience showed the taxonomy at the firm level more useful for CAPEX (less so for OPEX or revenues). He also explained that, regarding ESG indicators, CO2 calculation is cumbersome because the metrics are difficult to apply, can lead to confusion and that there is thus a need for a better measurement/calculation.

The ensuing discussion sketched a potential lesson for green innovation policy from the digital transformation even though Europe is not leading in the ICT service and social networks. The idea is to go for applications of these technologies in areas where Europe is strong, e.g. engineering, automobiles and pharma. This could also be applied to applications for the twin (green and digital) transition. This could also lead to capturing emerging value chains at an early stage (when ideas and players are not yet connected/networked). Further, the discussion revealed that companies are much more diverse than the traditional classifications into sectors, technologies and taxonomies. The sustainable finance taxonomy is also an opportunity to better characterise firm activities beyond these classifications. In addition, even if only a few companies currently implement such practices, large companies and industrial federations are good leaders to serve as role models/central nodes for potentially scaling practices and green accounting down to the 99% of smaller companies. In general, experience from industrialists participating in the EU taxonomy exercise would also see usefulness in evolving from pressure (output) to state (transformation/impact) indicators that serve internal management purposes as well as external reporting. Together

with regional reference benchmarks and wider societal impact data they could use for positioning regarding the wider social context, for which companies have very limited data collection capacities Ongoing challenges include the necessary granularity of data (to be balanced against cost and added value), and the metrics, indicators, scope and methodology. The potentially high usefulness of country-by-country information on taxes paid by companies, and the need of industry for digital and green skills were mentioned. While the former would put the burden of better monitoring of the adoption of sustainable activities by the companies on the public sector, the latter could be addressed by business education partnerships and vocational training as a practical approach to the twin transition.

Opening Session Day 2: How the Taxonomy Works

Paolo Canfora (JRC.B5 Circular Economy and Industrial Leadership) provided a detailed overview of the sustainable finance taxonomy as a set of activities currently focused on Climate Change Mitigation. The technical criteria are set in a delegated act of which the first one was adopted the day before the workshop

This Taxonomy is built on six environmental objectives of sustainability[14], where investments should contribute significantly to at least one of these objectives and simultaneously do no significantly harm to the other objectives. The taxonomy can both be used as strategic tool in large companies in measuring the sustainability of turnover, CAPEX, OPEX, and for policy monitoring EU and Member States, green financial ecolabel. Monitoring the share of taxonomy-relevant activities in turnover gives a snapshot of the current share sustainability of activities in the company's business, whereas monitoring CAPEX provides an indication of progress towards becoming more sustainable by investing in improved fixed assets. A substantial number of reports according to the taxonomy will be available in 2024, and in parallel, conceptual work for extending towards further objectives (e.g. circular or bio-economy) is ongoing.

Session 2: "Recognizing Green": Sustainable private R&D indicators

Serena Fatica (JRC B.1 Finance and Economy) presented an analysis on Green Bond financing and its relation to R&I. While they are a relative new market practice, the use of green bonds is growing steadfastly, with Europe having a clear leadership. Transparency and disclosure are important determinants of the success of the market. The lack of a clear and harmonized definition of green bonds and green projects leads to potential risks of market disruptions from greenwashing. Against this background, the European Commission is proposing an EU Green Bond Standard (EU GBS), inspired by market best practices, which aims to enhance the transparency, comparability and credibility of the green bond market for both borrowers and investors. The emphasis on the 'use of proceeds', which uniquely characterizes green bonds, allows for data mining of the activities financed therewith. A

[14] Climate change mitigation, Climate change adaptation, Sustainable use and protection of water and marine resources, Transition to a circular economy, Pollution prevention and control and Protection and restoration of biodiversity and ecosystems.

text mining of over 1 100 worldwide issuances of green bonds during the past 10 years showed a focus on climate change and energy transformation, with increasing reporting propensity and showed that 16% of such bonds are used for refinancing of ongoing sustainable initiatives. Around 40% of the green bonds are issued by non-financial companies, which is 3.6% of the overall bond market in EU27, thus indicating huge potential for further growth. JRC research shows that for non-financial companies, green bonds are a cheaper source of financing and a credible signal of green engagement (lower scope 1 emissions at the company level). There is still room to improve the understanding of green bonds for the R&I context. The EU Green Bond Standard mentions R&I projects as suitable descriptions, but intangible assets still appear more frequently in the descriptions of sovereign than corporate green bonds, which might indicate an underuse of green bonds for R&D projects.

Thomas Verheye (Principal Advisor Green Finance & Investment, DG-ENV) presented challenges of mobilizing green finance & investments from the environmental policy considerations. The rapidly degrading of all natural capital combined with relevant interlinked risks are jeopardizing not only environmental, but also economic and social sustainability. This is why behind the Green Deal there is the concept of prioritizing beyond the climate and sustainable finance center-stage, which needs a much more holistic approach for the economy and society. Among all global debt and market capitalisations, only 2% can be considered to fall under ESG aspects, leaving 98% "not proof" under the Green Deal challenge. A clear integral management agenda for effective and efficient forward management of impacts, dependencies, and related risk whilst respecting the do no significant harm principle is thus necessary. Natural capital accounting[15] (air, water, land and biodiversity and the sum of these parts) is proposed as a solution to get a systematic and integrated view. He gave some examples that showed that Natural Capital Accounting is already being applied by a few companies to push greener Global Value Chains, and such concepts could also be used to push the R&I agendas of firms complementing the financial taxonomy reporting. This could also be used in the InvestEU Circular Economy Investment Agenda as guiding principle. Further, the need for further use of Life-Cycle Analysis to understand the full environmental and social impact was underlined.

Seán O'Reagain (Deputy Head of Unit Industry 5.0 R&I.E5) presented the recently published Transitions Performance Index[16] (TPI). The TPI is an index measuring the progress of Member States and a range of other countries (capturing 90% of global GDP) in addressing the transitions needed to achieve sustainability based on the Green Deal objectives: economic, social, environmental and governance. The index is based on existing indicators and compares international statistics. Five top performers are European countries

[15] See https://ec.europa.eu/environment/nature/capital_accounting/index_en.htm
[16] See https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/support-national-research-and-innovation-policy-making/transitions-performance-index-tpi_en

(CH, DK, NL, UK, IRL), and very good progress by EU countries can be observed. Compared to the targets, EU countries should however improve environmental transition performance.

Carsten Olsson (Head of Unit European Businesses, EUROSTAT) presented the approach towards covering green innovation in the Community Innovation Survey (CIS) 2014 and especially 2020. Here, the CIS is especially useful as it goes beyond larger companies and allows a representative picture of green innovation and transition for smaller firms. These two CIS define innovations that generate positive or lower negative environmental impacts and innovations with primary or by-product benefits (both in production as in use) as innovations with environmental benefits. These questions allow for more detailed understanding of the environmental impact of innovations, as well as drivers for such. The approach will be replicated in future CIS surveys.

Aliki Georgakaki (Scientific Officer Knowledge for the Energy Union JRC.C7) presented an example of reviewing and establishing indicators of clean energy competitiveness in support of the Energy Union and the clean energy competitiveness report. Composite indicators are built on a number of variables and have a country or Europe geographical scope rather than the EU, applying varying definitions of green) sectors, and are not consistently updated, resulting in a somehow limited understanding of competitiveness. The study presented by Georgakaki proposes a more realistic approach to monitor clean energy competitiveness using specific clean energy competitiveness data based on accessible items, including bibliometrics, patenting trends, trade, (new) jobs and start-ups. These are then combined for the European Climate Neutral Industry Competitiveness Scoreboard, monitoring 10 indicators and 12 technologies. Also, a running project on data-mining EU ETS company data on stationary installations was shown, which links company activities (R&D, patents, ownership) with installations.

Closing session: Summary from the Rapporteur and Policy Roundtable

Alexander Tübke (Team Leader Knowledge for Finance, Innovation and Growth JRC.B7) summarised the main issues harvested during these discussions in eleven key points:

Main data and information gaps

1. Clear data needs from the policy and industry side, both for new and improved indicators as for the availability of data
2. Very heterogeneous data, need for important efforts to deepen understanding, consistency and granularity of data
3. Data gaps: policy vs industry, financial vs sustainability, smaller granularities

What could be addressed?

4. Green market demand remains a key driver; how can this be stimulated?

5. Expected increased coverage by taxonomy, green bond standard, non-financial sustainability reporting and also the CIS
6. Use of taxonomy as strategic tool by firms, better understanding ESG data, Green Bond as financing part, natural capital accounting, implementing green in reporting standards, within the implementation of the CIS
7. Exploring the dynamics/directionality in interpretation of existing data (going beyond the existing KPIs)
8. Understanding of the green (2%) and non-green investments (98%) and involving the non-green into the green agenda is very important

Possible ways forward (beyond regulation and new standards)

9. New (sets of) policies for large companies and industry federations, their networks, and ecosystems
10. Examine the twin transition
11. Further efforts in bringing data together, stakeholder involvement and co-creation

The following section summarises the main points from the policy roundtable. **Norbert Malanowski** (VDI Technologiezentrum) suggested that the key to innovation policy success is for innovation boundaries to be crossed. Many suitable policy instruments already exist (regulations, economic transfers and soft instruments), but are still discussed separately, resulting in insufficient use/directionality of public-private partnerships, innovation alliances, real world laboratories, or experimentation rooms. Regarding the latter two, while Germany has recently launched such innovation policy instruments, the window of opportunity only exists for a few years due to stiff competition and swift climate change. Here, financing is usually not the most important point, but rather networking, anticipation of trends and exchange of know-how. A stronger anticipation approach towards longer term thematic coordination, also from Member States with the EU, would be welcome.

Irina Reyes (Assistant to the Director DG-R&I.E) underlined how the different EU policy measures (including e.g. the EIB, InvestEU, RRF, Horizon Europe, Industrial Alliances and IPCEIs) are fully supporting the Green Deal directionality. R&I activities are critical here, and measuring these via investment and patents data is highly relevant and forward-looking. She outlined however the need to understand better to which degree also non-green activities are potentially beneficial, increase the understanding of the companies and industries we cover e.g. in the Scoreboard, and if we can zoom into technologies and sectors with a view to identify emerging actors and technologies in order to facilitate networking at a critical stage.

Marco Matrisciano (Sustainability Management, CSR Europe) highlighted the usefulness of combining both company-level information on sustainability, starting from the largest and most relevant firms, and industry federation/sectoral information in order to get a balanced picture of Green Deal progress.

PRESENTERS

Sara Amoroso is an economist at the Joint Research Centre (JRC) of the European Commission, Spain. Sara's research focuses on industrial innovation and innovation policy. Her main topics of interest are foreign direct investment, firm dynamics, and R&D networks. She is an associate editor of the Journal of Technology Transfer. Her research has been published in journals such as European Economic Review and Small Business Economics.

José Luis Blasco is Global Sustainability Director at Acciona and leads the sustainability objectives across Acciona worldwide, combining competitive capabilities to strategically advance in sustainable economy. He is also Member of the EU Technical Expert Group on Sustainable Finance - European Commission.

Paolo Canfora_is Team Leader for the Sustainable Finance Taxonomy in the circular economy and industrial leadership unit of the Joint Research Centre of the European Commission. His work involves the conceptual and methodological development of the EU Taxonomy: coordinating the provision of technical expertise on the economic activities for which criteria are developed and leading the Commission services in guiding the work of the members of the Platform on Sustainable Finance as far as the development of the technical screening criteria is concerned.

Peter Dröll is Director of Prosperity, Directorate-General Research and Innovation. Peter works in the Directorate-General for Research and Innovation and innovation since 2008, first in charge of innovation, since 2016 for Industrial Technologies. Previous positions in the Commission include financial control, environment policy and enlargement policy. From 2004-2008 he was Head of Cabinet of the Science and Research Commissioner Janez Potočnik. Peter is a lawyer by training with a doctorate degree in German constitutional law and European law.

Serena Fatica (JRC.B.1) works as a principal economist at the Joint Research Centre of the European Commission, having previously served in the Fiscal policy Directorate of the DG for Economic and Financial Affairs (ECFIN). She holds a PhD in Economics from the Catholic University of Leuven and is a graduate from LUISS Guido Carli University in Rome. At the JRC, she currently develops research in support of EU policymaking in the area of firm financing and vulnerabilities. She leads the research stream on sustainable debt instruments, including green bonds, and coordinates a research project on the impact of climate risk and economic shocks on firm performance. Her research has been published in academic journals such as the Journal of Financial Stability, Journal of Macroeconomics, Economic Modelling, and others.

Aliki Georgakaki (JRC.C.7) is a Mechanical Engineer with a Masters from the Aristotle University of Thessaloniki (Greece), and a PhD from the Technical University of Denmark, both focusing on energy and sustainability. Re-joined the JRC in 2013, having previously

held research positions there, as well as with the Technical University of Denmark and the Low Carbon Research Institute in Wales. Currently part of the Knowledge for Energy Union Unit in JRC Directorate for Energy Transport and Climate, where she leads the Energy Research Innovation and Competitiveness work in support of the Energy Union, the Strategic Energy Technology Plan and the Tracking Progress work stream of Mission Innovation.

Keeran Gwilliam-Beeharee, Executive Director for Market Access, Vigeo Eiris (VE) joined the Vigeo group in 2011. In that time, he has worked across its Brussels, Paris and London sites operating between the methodological and product development teams to bring new solutions to market. He is a recognized public speaker on ESG topics representing the Moody's ESG Solutions Group at United Nations, Responsible Investor and Reuters forums in 2020. Today, he is responsible for marketing and engagement strategy for the groups' Sustainable Finance and ESG Measures products and services. Keeran has a Bachelor's of Laws from the University of Manchester and a Masters in International Security from the University of Sussex.

Mikel Landabaso is Director of Growth & Innovation in the Joint Research Centre in Seville since December 2019. He was Director of Strategy and Corporate Communication in DG Communication 2016-2019, responsible for the design and implementation of the new generation of EU Corporate Campaigns. He has a PhD in Economics and has been secretary (1988-1990) of the Basque regional science association as well as a member of the scientific committee of the regional science association. Mikel has also been a Member of the Advisory Board of the Basque Institute of Competitiveness as well as external expert to the first Spanish White Book on Innovation by the COTEC foundation. He has edited, co-authored or written chapters in several books and international journals on economic development and has participated as invited speaker by national and regional governments as well as international organizations, including OECD, the Ford Foundation, National Institute of Science and Technology Policy in Japan and the World Bank.

Lina Lemessiou (EFRAG) joined EFRAG in September 2018 to become mainly involved in the work of the European Corporate Reporting Lab @EFRAG. Prior to this, she has benefited from a diverse professional experience. She has worked on assurance in public practice with PricewaterhouseCoopers, on internal audit in the financial services industry, on audit oversight and regulatory compliance at international level for ACCA, as a technical expert on corporate reporting, audit, ethics, public policy and regulation for the Institute of Certified Public Accountants of Cyprus, and as an adjunct professor for the University of Cyprus lecturing on auditing, financial reporting, ethics and corporate governance. For a number of years she has also acted as Counsellor on Company Law for the Government of Cyprus, with direct involvement in legislative developments at national and EU level on audit, accounting and non-financial information. Lina holds a degree in computer science from the University of Manchester. She is also a Fellow member of the Institute of Chartered Accountants in England and Wales.

Antoine Mach (Covalence) is co-founder and managing partner of Covalence SA. Antoine has a long experience in Sustainability and Business, shown by the prize for Best Pedagogical Innovation at the FIR-PRI Finance & Sustainability Awards 2019. He's a co-founder of Sustainable Finance Geneva, an association that promotes sustainability and responsibility within the Geneva financial community.

Norbert Malanowski is working for VDI TZ in Düsseldorf as a senior consultant and project leader in the field of innovation and industrial policy and on socio-economic aspects of emerging technologies since 1999. In addition, he was a senior lecturer for innovation and labour policy at the University of Witten/Herdecke from 2009 to 2020. In March 2021 he was appointed as honorary judge of the Labour Court Duisburg, Germany. He has a doctoral degree in Political Science/Political Economy (focus on "Tripartite Forms of Co-operation in Industrial Policy"). From 2005–2007, he worked as Senior Scientist at the JRC Seville, focusing on Information and Communication Technologies for Active Ageing in Europe.

Jan Noterdaeme *[he will be listening in for CSR Europe, but not present. It might be a good idea to include him in the discussion]* is the co-founder of CSR Europe (1996), a Network of 100 corporate members and National Partner Organisations that supports and unites 10.000 enterprises across Europe on Corporate Sustainability and Responsibility. On behalf of former President, Jacques Delors, Jan is the co-author of the European Business Declaration against Social Exclusion launched in 1995. This was the foundational act of CSR Europe which he started in 1996, together with Ann Vandenhende.

Carsten Olsson (Head of Unit Business and Trade Statistics ESTAT) : Carsten Olsson has a background in the intersection between software and statistics (MSc) with a PhD in statistics. After some years in the private sector, he joined the European Commission in 1993. He took up his first post with Eurostat in the field of consumer prices in 1997. Subsequently, he has been involved in statistics on unemployment, government finances, macro-economic indicators, R&D, Innovation, and ICT statistics. Currently, he is Head of Unit for 'European Businesses' that also covers tourism statistics.

Sean O'Reagain (DG R&I - Industry 5.0) is Deputy Head of Unit, "Sustainable Industry Systems" at the European Commission's Directorate General for Research and Innovation. In this capacity, he implements policy and actions under the Horizon 2020 Framework Programme to promote sustainable industrial innovation by incorporating knowledge in high-value-added products and highly-efficient processes. In this regard, Mr. O'Reagain oversees the contractual Public-Private Partnerships on and the Sustainable Process Industry (SPIRE), Factories of the Future and Energy-Efficient Buildings. Mr. O'Reagain was previously responsible for the Joint Technology Initiatives with industry and the European Technology Platforms.

Irina Reyes

Doris Schröcker is heading the Unit for Industrial R&I Agendas and Business Intelligence in Directorate General Research and Innovation in the European Commission. Her background is business administration with marketing and industrial management, and she has worked in different positions in EU R&I policy and programme management in the European Commission (mobility/transport and energy, industrial and key enabling technologies).

Fabrice Stassin Fabrice holds a PhD in Chemistry & Materials Science as well as a MBA from the University of Liège in Belgium. After working in Strategy Consulting for a few years in Belgium, Netherlands and USA, Fabrice joined Umicore in 2008 as Innovation Manager in the field of clean energy and clean mobility technologies. Since 2012, he is part of the Brussels-based team of Umicore Government Affairs focusing on Electromobility Projects, be it based on batteries or hydrogen technologies. Fabrice was instrumental in the development of EMIRI (the Brussels-based association promoting Advanced Materials) which he managed for 5 years until 2018. Over the past years, Fabrice concentrated his activities on promoting the key enabling role of batteries, hydrogen technologies and recycling to decarbonize energy, mobility and industry. At Umicore, Fabrice is also in charge of Japanese Affairs focussing on recycling and clean mobility.

Alexander Tübke was appointed Team Leader of the Industrial Research and Innovation team in 2016. He studied Industrial Engineering at the Universities of Karlsruhe (Germany), Lausanne (Switzerland) and Seville (Spain) and holds a European Doctorate of Industrial Engineering of the University of Seville. Alexander has working experience in several multinational companies in the field of marketing and audit. He joined the European Commission's JRC in 1999. Since then he was engaged in research projects in the area of Innovation & Competitiveness, Technology Assessment, Enlargement and Strategic Policy Intelligence.

Els van der Velde is expert in the field of "Competitiveness and Innovation". She has extensive experience in technological innovation, key enabling technologies, ecosystem and value chain analyses. As a project manager she has lead and participated in various European and Flemish projects for the European Commission, OECD and other international organisations. She is a member of different national and international networks and she has published in several peer reviewed journals and books as an author and a co-author. Els graduated as a civil engineer and obtained her PhD in Innovation Management at Ghent University.

Thomas Verheye (Principal Advisor Green Finance & Investment, DG ENV) is Principal Advisor at the European Commission on matters relating to sustainable finance and investment. His prior positions included several managerial responsibilities for EU policies on air quality, ozone depleting substances and fluorinated gases, innovative financing solutions relating to climate and energy, technology transfer under the UNFCC, the auto-oil programme, etc. His previous employers include the Bank of New York, the International Monetary Fund, and Ernst & Young. He holds a bachelor and master's degree in business economics from the University of Ghent, and an MSc in audit and tax from the Vlerick

Business School. Per 1 June 2021, he moved as Principal Advisor Green Finance & Investment to the EIF.

Annex: Concept Note and Agenda

4th GLORIA virtual workshop

Capturing the progress of industrial innovation efforts towards competitive sustainability

27 & 28 April 2021

1. Policy Agenda

The EU **Green Deal**[17] aims to boost Europe's competitiveness based on cutting-edge innovation in a broad sense. It constitutes an integral part of the Commission's strategy to implement the **United Nations 2030 Agenda** and the **Sustainable Development Goals**. The Commission emphasises the need for **structural transformation** of our Economy and need for crosscutting policy support towards **competitive sustainability**[18] where EU companies play a central role in the transition to a more environmentally friendly path while at the same time competing on a global level. This workshop aims at capturing the progress of industrial innovation efforts towards this competitive sustainability objective.

There are several initiatives of the policy agenda with high relevance for the path of the industry towards competitive sustainability and transition through innovation:

The **industrial strategy**[19] aims to ensure competitiveness on the global stage via investments in Strategic Value Chains and Industrial Ecosystems – e.g. batteries and bio-based products – and new forms of collaboration with industry for ensuring Europe's strategic autonomy and technological leadership.

The **European Research Area**[20] will continue to incentivise R&D investment from the private sector. This is also emphasised in the **roadmap**[21] that aims to revatilise ERA underlining the importance of a transformative R&I policy that shapes technological and societal change to deliver a sustainable European society..

[17] COM(2019) 640 final

[18] Competitive sustainability has always been at the heart of Europe's social market economy and should remain its guiding principle for the future. Moving towards a sustainable economic model, enabled by digital and clean technologies, can make Europe a transformational frontrunner. Leadership on environmental protection and a strong, innovative industrial base must be seen as two sides of the same coin, giving the EU a competitive first-mover advantage. A stable economy, allowing for policies focused towards the long-term, and a just transition for those most affected by the transformations are prerequisite for success and should complete our framework. (see COM 2019/650 final, pp. 3 and corresponding figure).

[19] https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

[20] https://ec.europa.eu/info/news/era-communication-sets-pace-efficient-uptake-research-and-innovation-results-2020-sep-30_en

[21] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12495-Communication-on-the-future-of-research-and-innovation-and-the-European-Research-Area

Investment is key to achieve the above policy objectives. The **Sustainable Finance Package** shall trigger €1 trillion investment over the next decade.[22] The **upcoming renewed sustainable finance strategy,**[23] and the **EU taxonomy on sustainable finance**[24] will strengthen the foundations for sustainable investment by creating an enabling framework and include sustainability principles in the financial and corporate sectors.

2. Workshop Background: The EU R&D Scoreboard

In support of the above policy agenda, this workshop is part of the **Global Research & Innovation Analyses**[25] (GLORIA) project undertaken jointly between the Commission's Joint Research Centre and the Directorate General for Research & Innovation (R&I). **GLORIA workshops** are held in order to inform in our research on industrial innovation and obtain feed-back from the workshop participants representing different stakeholders about how the GLORIA activities are best serving their needs. GLORIA offers in particular empirical evidence to support policy-making and information and benchmarking tools for companies. Up to now, twelve workshops have been held.[26]

The most visible outcome of the GLORIA project are the **EU Industrial R&D Investment Scoreboards**[27] providing economic and financial data and analysis of the top corporate Research & Development (R&D) investors from the EU and from abroad. The Scoreboard is based on company data extracted directly from the financial accounts of each company for up-to-date monitoring and benchmarking. It allows for comparisons between companies, sectors, and geographical areas, as well as address emerging investment trends and patterns.

The **2020 Scoreboard**[28] shows that industrial R&D investments would be an important contribution to the long-term orientation in the recovery and resilience context following the pandemic crisis and are essential for the Green and Digital transitions. The R&D invested by the Scoreboard companies is equivalent to approximately 90% of the world's business-funded R&D, and these companies own around two thirds of patents filed at the largest 5 IP offices worldwide. The central role of these companies in developing technologies that can provide solutions to the current crisis is shown by the example that key companies involved in developing vaccines for COVID-19 are included in the Scoreboard. Evidence from the Scoreboard shows that the **EU industry faces urgent challenges**:

- The current pandemic crisis calls for solutions especially from the pharma & biotech and ICT sectors, where competitors to the EU27 are very strong.

[22] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en
[23] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12635-Renewed-sustainable-finance-strategy
[24] https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en
[25] See: http://iri.jrc.ec.europa.eu/home/ The activity is undertaken jointly by the Directorate General for Research and Innovation, Directorate E Prosperity (DG R&I; see: https://ec.europa.eu/info/research-and-innovation_en) and the Joint Research Centre, Directorate B Growth & Innovation (JRC-B; see: https://ec.europa.eu/jrc/en/science-area/innovation-and-growth).
[26] See: https://iri.jrc.ec.europa.eu/events
[27] See: https://iri.jrc.ec.europa.eu/scoreboard
[28] https://op.europa.eu/en/publication-detail/-/publication/73e624aa-406c-11eb-b27b-01aa75ed71a1/language-en

- The EU leadership in the automotive sector is **seriously challenged** as digital technologies take a higher proportion of the value added and a profound green transition of mobility is needed.
- The continued increase of the number Chinese companies in the Scoreboard and – compared with EU28 in previous Scoreboard editions - the exit of UK ones weakens the EU representation among the top corporate R&D Investors, pointing to **strategic gaps in industrial R&D capacities**. China comes second in numbers of companies, but still behind EU in R&D investment terms.
- The **good news** is that the EU has traditionally also an **excellent base of key R&D players** in medium technology sectors, and will benefit from policies fostering growth opportunities for innovative companies. In addition, the EU is the global leader on high-value green patents, with leadership in key sectors like climate and bioeconomy.
- Finally, the Scoreboard includes the results of a pilot exercise on firm-level disclosure and reputation scores related to main SDGs. By applying a methodology to convert a set of ESG indicators[29] into SDG scores. Results reveal that European and Japanese Top investors in R&D show higher SDG scores as compared to US- and China-based investors for the selected SDGs.

3. Workshop Objectives

The new policy context requires a **better understanding about to what extent current industrial innovation efforts are contributing to progressing towards the EU objectives of competitive sustainability**.[30] The Scoreboards will thus incorporate additional relevant information and indicators, to monitor and analyse related questions and in particular to identify areas where policy intervention might be needed to further incentivise R&I investments from relevant industries. In this respect, the GLORIA project will aim at providing evidence to policy makers and benchmarking tools to industry that will support and complement other initiatives, in particular the development and implementation of the EU taxonomy on sustainable finance.

Questions to be discussed at the workshop:

- How can the EU Scoreboard become a tool to complement **the EU taxonomy criteria and capture and monitor the R&I aspects** of Green Deal implementation and competitive sustainability of EU industry? What EU and global R&I competitiveness issues need to be addressed? Which additional indicators could provide insight to the stakeholder needs?

[29] Environmental, Social and Governance

[30] Competitive sustainability has always been at the heart of Europe's social market economy and should remain its guiding principle for the future. Moving towards a sustainable economic model, enabled by digital and clean technologies, can make Europe a transformational frontrunner. Leadership on environmental protection and a strong, innovative industrial base must be seen as two sides of the same coin, giving the EU a competitive first-mover advantage. A stable economy, allowing for policies focused towards the long-term, and a just transition for those most affected by the transformations are prerequisite for success and should complete our framework. (see COM 2019/650 final, pp. 3 and corresponding figure).

- How do **companies** measure competitive sustainability? To what extent do they report on sustainability for their internal innovation activities? How is industry preparing for the EU taxonomy?
- How do **financial actors** measure sustainability of companies and what role does it play in selecting their portfolio? How does the EU taxonomy contribute to this? What is measured beyond or complementing the taxonomy criteria?
- How do **Non Governmental Organisations (NGOs), statistical data collectors and providers and standard setting institutions** (e.g. GRI, ISO, ESTAT, EFRAG, etc) measure competitive sustainability of industries and companies? How can the EU taxonomy be an added value? What can we learn from current data availability and difficulties in data collection?
- Can answering the questions above **facilitate access to finance for innovation and investments to meet the objectives of competitive sustainability**? Which data are missing and could (or not) be collected? What are the barriers to be overcome?
- Which **lessons for the R&I policy agenda and the R&D Scoreboards** can be derived?
- What **will not be covered by the taxonomy and how incentivize the companies** to report on it? What can the European Commission do?
- The 2020 EU R&D Scoreboard explored in its chapter "Sustainability disclosure and reputation of top R&D investors " an SDG-related indicator of corporate disclosure and reputation to shed light on how top R&D investors evolve towards sustainability. The aim is to validate this approach and – in future Scoreboards – develop it further, considering also both the well-known ESG performance indicators and the societal and environmental impacts of corporate and sector activities.

4. Workshop Deployment

The main objective of this event is to capture the state of play of industrial innovation efforts and how it progresses towards the realisation of the Green Deal targets. The virtual workshop will be held in **two virtual morning sessions during 27 and 28 April 2021**, following the adoption of the first delegated act[31] of the EU taxonomy on sustainable finance and before the adoption of the second one planned for June.[32]

The deployment shall promote **interactive discussion and in-depth work in focus groups** among the participants:[33]

⇨ Day 1: Policy background, keynote speech and industry session
⇨ Day 2: Finance/NGO/standard setters session and policy roundtable

[31] https://ec.europa.eu/info/law/sustainable-finance-taxonomy-regulation-eu-2020-852/amending-and-supplementary-acts/implementing-and-delegated-acts_en
[32] The second act will focus on specifying the information companies will have to disclose on how, and to what extent, their activities align with those considered environmentally sustainable in the taxonomy.
[33] Participation by invitation only, contact JRC.B7 Lesley.Potters@ec.europa.eu

The workshop will **conclude** with the identification of main data and information gaps and a **policy roundtable**, including possible ways forward tackling data and analyses needs.

4th GLORIA virtual workshop

Capturing the progress of industrial innovation efforts towards competitive sustainability

Agenda

Day one: 27 April 2021

- **Opening session**
  - 9:30 – 10:45
  - Welcome (10 minutes): **Peter Dröll** (Director DG-R&I F Prosperity) and **Mikel Landabaso** (Director JRG Growth & Innovation)
  - **Doris Schröcker** (Head of Unit DG-R&I E.1 *Industrial Research, Innovation & Investment Agendas*) (10 minutes)
    - The importance of the Green Deal and the challenges of monitoring the efforts of its implementation:
  - **Reinhilde Veugelers** – **Bruegel**
    - *Keynote Speech* "A Green Industrial Policy For Europe"
    - (30 minutes)
  - **Q&A** (25 minutes)

- **Comfort break** *(15 minutes)*
  - 10:45 – 11:00

- **Session 1: "Being Green": monitoring sustainable R&D efforts – lessons from industry**
  - 11:00 – 12:30
  - **Moderator**: **Doris Schröcker**
  - **Industry perspective:**
    - How do companies measure sustainable innovation activities (framework, indicators) and to what extent do they report these activities?
    - How are companies preparing for the EU taxonomy?
  - **Active discussants** providing ***3-slides pitches each*** (50 minutes + 40 minutes discussion):
    - **Antoine Mach** *(Managing Partner)* **& Sara Amoroso** *(Senior Economist)* – **Covalence & JRC B.7:**
      - SDG-related firm-level indicator used in the Scoreboard: validation of the approach
    - **Keeran Gwilliam-Beeharee** *(Executive Director)* **– Vigeo Eiris & CSR Europe**
      - The European Sustainable Industry Barometer – a first look

        - **Fabrice Stassin** *(Director Government Affairs Electromobility)* - **Umicore**
            - Innovating towards sustainable batteries made in Europe – The Umicore story
        - **Els van der Velde** *(Senior Expert)* – **IDEA Consult**
            - Green Deal Study (together with IDEA Consult)
        - **José Luis Blasco** *(Global Sustainability Director)* – **Acciona**
            - Lessons from adapting the EU Taxonomy
        - **Expected output**:
            - Indicators of importance for companies,
            - Comparability of indicators and data gaps
            - Main barriers/enabling factors for reporting

Day two: 28 April 2021

- **Opening session**
    - 9:30 – 10:10
        - **Scenesetter: The EU taxonomy – how does it work?** (20 minutes), **Paolo CANFORA** *(Team Leader for EU Taxonomy)* **- JRC B.5**
        - **Q&A** (20 minutes)

- **Comfort break**: *5 minutes*

- **Session 2: "Recognizing Green": Sustainable private R&D indicators**
    - 10:15 – 12:00
    - **Moderator**: **Xabier Goenaga**
    - **Finance and NGO/standard setters perspective:**
        - How do different actors measure competitive sustainability?
        - What can be the added value of the EU taxonomy?
        - What is measured beyond or complementing the taxonomy requirements?
        - To compare what is already available and what is missing with respect to new expectations?
    - **Active discussants providing *3-slides pitches each*** (60 minutes + 45 minutes discussion):
        - **Serena Fatica JRC.B.1**
            - Green bond financing of private investment and R&I
        - **Lina Lemessiou** *(Advanced Technical Manager)* **– European Corporate Reporting Lab @ EFRAG**
            - Sustainable reporting standards and sustainable competitiveness
        - **Thomas Verheye** *(Principal Advisor)* **- DG ENV**
            - Mobilizing Green Finance & Investments
        - **Seán O'Reagain** *(Deputy HoU Industry 5.0)* – **DG R&I E.4**

        - TPI Indicators and capturing sustainability
    - **Carsten Olsson** *(Head of Unit Business and Trade Statistics)* – **ESTAT**
        - Capturing Sustainable Innovation
    - **Aliki Georgakaki** *(Scientific Project Office)* - **JRC.C.7**
        - Indicators of Clean Energy Competitiveness
- **Expected output**:
    - State of the art of widely used financial indicators to measure sustainable private R&D
    - Overlap between monitoring interests between financial sector and public sector

- **Comfort break:** *12:00 – 12:15*

- **Closing session**
    - 12:15 – 13:20
    - **Summary of the sessions by the rapporteurs** (30 mins)
        - **Alexander Tübke**, **Nicola Grassano**, **Lesley Potters** (JRC B.7)
        - Identification of main data and information gaps based on the
        - Matrix of points of action and where they could be addressed
        - Sketching of possible ways forward tackling data and analyses needs
    - **Policy roundtable (30 mins):**
        - Moderator: **Alexander Tübke** (JRC) and **Emilia Chehtova** (DG R&I)
        - **Thomas Verheye** (DG ENV), **Irina Reyes** (DG R&I), **Norbert Malanowski** (VDI Technologiezentrum), **Paolo Canfora** (JRC), **Marco Matrisciano** (CSR Europe)
    - **Closing (5 mins): The way forward**
        - **Doris Schröcker** (Head of Unit DG-R&I E.1 *Industrial Research, Innovation & Investment Agendas*) and **Xabier Goenaga** (Head of Unit B7 *Knowledge for Finance, Innovation and Growth*)

5. Annex: Privacy Statement and Data Protection

Privacy Statement and Data Protection

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Contact information

This activity is organised by European Commission's Joint Research Centre (JRC), Directorate B (Growth & Innovation), Unit B7 (Knowledge for Finance, Innovation and Growth). In case you have questions related to this survey, or concerning any information processed in this context, or on your rights, feel free to contact the JRC B7 at the following email address: JRC-B7-SECRETARIAT@ec.europa.eu.

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