

JUST SUSTAINABLE INNOVATION:
SHARED SYSTEMIC STEWARDSHIP
AS GOVERNANCE IMPACT OF SUSTAINABLE INVESTMENT?*

SUMMARY: 1. On the Principle of Sustainable Innovation – 2. Sustainable Innovation as Just Innovation? The EU Policy Landscape on Climate and Energy Justice – 2.1 Climate and Intergenerational Justice – 2.2 Energy Justice – 3. Empowering Vulnerable Communities through Impact-Based Stewardship. Evidence from the EU Regulatory Frameworks on Sustainable Governance, Sustainable Finance, Just Transition, Integrated Local Development – 3.1. On Engagement and Stewardship as a Defining Feature for Sustainable Governance and Sustainable Finance – 3.2 On Just Transition and Integrated Local Development: the Partnership Principle as the True Source for Engagement and Stewardship – 4. Conclusions: the Role of USDIPS and CSOs in Building Local Sustainable Innovation Ecosystems for Vulnerable Communities.

* This study is supported by the European Union's Horizon 2020 research and innovation programme under grant agreement No 959420 for the EUARENAS.EU Project. A previous version of this study has been featured in the City Science Initiative Report and it is available at <https://openresearch.amsterdam/en/page/107703/2024-csi-social-impact-for-climate-justice>. The author wishes to thank Caroline Nevejan, Ayşenur Korkmaz, Floris Vermeulen, Egor Isaev, Maria Arche, Dora Longo Bahia, Alexandra Perovic, Alan Cienki, Sanne De Boer, Wendy Bos, Nathalie Van Loon, Natascha Hulst, Kenneth Reynold Mills, Josep Quer, Jerzy Gawronsky, for comments produced on previous versions of this study and / or participating to its discussion in a self-organized seminar at NIAS – KNAW on March 18th, 2024; Kenneth Amaeshi, Silvana Perretta, Maria Rusca, Antonio Gaudio, and the other participants to the seminar held at Luiss University on May 9th 2024, on Planetary Health: One People, One Planet, One Health; Kinanya Pijl, Candida Leone, Vladimir Bogooski, Laura Burgers, Helen Jansen, Nena Van Der Horst, Yannick van den Berg, Yannick van den Berg who gave useful insights at a seminar hosted by Marija Bartl at the Center for Transformative Private Law of University van Amsterdam on June 3rd 2024. Finally, the author feels greatly indebted to Elena De Nictolis and Sheila Foster for their constant inspiration on climate justice, energy justice and stewardship, Costanza Consolandi, Jim Hawley and Keith Johnson for insightful exchanges on governance impact for sustainable investments, as well as and above all professors Antonio Punzi and Aldo Sandulli for their patient mentorship and PhDs and Postdocs Alberica Aquili, Marijana Krstić, Benedicta Quarcoo, Adriano Contardi, Mario Manna, Pier Paolo Zitti for their critical support to the Fall 2023 and Spring 2024 intense research activities that were essential to the delivery of this study.

1. On the principle of sustainable innovation

This study attempts to demonstrate that according to the EU law and policy framework innovation is essentially oriented towards sustainability and that therefore “sustainable innovation” is the defining feature of the EU policy and investment approach addressing the pressing territorial and social divides that the ecological, energy, and technological transitions are generating¹. This definition builds on the existing literature² and the current policy framework on R&I³.

This hypothesis taps into the quest for a qualified version of the principle of innovation⁴ proposing to embed the dual imperative of improving

¹ On sustainable innovation see for a useful overview V. Cillo et al., *Understanding sustainable innovation: A systematic literature review*, in *Corp Soc Resp Env Ma*, 2019, n. 26, 1012–1025; O. Al-Jayyousi, H. Amin, H.A. Al-Saudi, A. Aljassas, E. Tok, *Mission-Oriented Innovation Policy for Sustainable Development: A Systematic Literature Review* 15(17) *Sustainability* (2023), 13101. For more general attempts to investigate the sustainability in the EU legal order see S. Schacherer, *Sustainable Development in the EU Legal Order*, in S. Schacherer (ed.), *Sustainable Development in EU Foreign Investment Law*, Brill Nijhoff, 2021, 100–147.

² Conceptually the principle can be extrapolated by combining M. Mazzucato, *Mission-Oriented Innovation Policies: Challenges and Opportunities*, in 27 *Ind. Corp. Change* (2018), 803–815; R. Brown, *Mission-oriented or mission adrift? A critical examination of mission-oriented innovation policies*, in 29(4) *European Planning Studies* (2021), 739–761; J.D. Sachs, G. Schmidt-Traub, M. Mazzucato, D. Messner, N. Nakicenovic, J. Rockström, *Six transformations to achieve the sustainable development goals*, in 2(9) *Nature sustainability* (2019), 805–814; J. Rockström, J. Gupta, D. Qin, S.J. Lade, J.F. Abrams, L.S. Andersen, D.I. Armstrong McKay, X. Bai, G. Bala, S.E. Bunn, D. Ciobanu, *Safe and just Earth system boundaries*, in *Nature* (2023), 1–10.

³ See Council Conclusions on the *Future governance of the European Research Area (ERA)*, 26 November 2021; Council Recommendation (EU) 2021/2122 of 26 November 2021 on a *Pact for Research and Innovation in Europe*; Communication from the Commission to the European Parliament and the Council, *2022 Strategic Foresight Report, Twinning the green and digital transitions in the new geopolitical context*, Brussels, 29.6.2022 COM(2022) 289 final; Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, *A Green Deal Industrial Plan for the Net-Zero Age*, Brussels, 1.2.2023 COM(2023) 62 final.

⁴ According to K. Garnett, G. Van Calster, L. Reins, *Towards an innovation principle: an industry trump or shortening the odds on environmental protection?*, in 10(1) *Law, Innovation and Technology* (2018), 1–14, the long-standing debate and contrast between the constitutional level precautionary principle (see articles 11, 114, 191 TFUE for environmental protection, and articles 12, 168, 169 TFUE for consumer protection) and the permissionless innovation principle (see article 173 TFUE requiring to devise an industrial policy that can foster ‘better exploitation of the industrial potential of policies of innovation, research and technological development’) can be solved if “A qualified innovation principle that encourages reasonable risk-taking while accepting an element of responsibility could help square the EU’s twin

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economic performance while concurrently enhancing environmental and social goals, both in the immediate and long-term scenario. Innovations are supposed to deliver enhancements across various dimensions – be it products, services, technological advancements, or organizational processes⁵.

Ideally, sustainable innovations are expected to not only yield better economic and technological positive outcomes, but also bring about tangible improvements in the environmental and social spheres⁶. The positive imaginary that surrounds these sustainable innovations would require them to land positive outcomes and impacts that extend beyond firms and governments immediate operations, thereby contributing to broader societal and ecological wellbeing⁷.

In essence, sustainable innovation requires firms and governments to transcend their traditional boundaries, purposes, and missions, integrate economic, technological, social, environmental goals and actively engage with all the stakeholders, in particular vulnerable communities. It represents a multifaceted and dynamic approach characterized by the simultaneous pursuit of economic prosperity⁸, environmental stewardship, and social wellbeing⁹ to drive positive change and contribute to a more sustainable future⁹.

Sustainable innovation emerges as a defining feature within the EU research and innovation funding program and the regulation governing it. Indeed, the Horizon Europe program and regulation delineates the trajectory of research and innovation from 2021 to 2027, succeeding its predecessor,

(though potentially incompatible) objectives of fostering innovation and offering a high level of environmental and consumer protection”.

⁵ See the Oslo and Frascati Manuals.

⁶ Article 3 (3) of the Treaty on European Union in establishing the internal market states that it «shall work for the *sustainable development of Europe* based on *balanced economic growth and price stability*, a highly competitive social market economy, aiming at *full employment and social progress*, and a *high level of protection and improvement of the quality of the environment*. It shall *promote scientific and technological advance*» (emphasis added). See also A. Hemphill, *The innovation governance dilemma: Alternatives to the precautionary principle*, in 63 *Technology in Society* (2020), 101381.

⁷ To a certain extent it could be argued that sustainable innovation is one of those political economy and constitutional imaginaries of prosperity Marija Bartl talks about in her recent contributions. See M. Bartl, *Imaginaries of Prosperity as Constitutional Imaginaries*, in J. Komárek (ed.), *European Constitutional Imaginaries: Between Ideology and Utopia*, Oxford University Press, 2023, pp. 360-377; Id., *Towards the Imaginary of Collective Prosperity in the European Union (EU): Reorienting the Corporation*, in *European Law Open*, 2022, 1(4), 957-986.

⁸ C. Mayer, *Prosperity: Better business makes the greater good*, Oxford University Press, 2018.

⁹ S.R. Foster, C. Iaione, *Co-cities: Innovative Transitions Toward Just and Self-sustaining Communities*, MIT Press, 2022.

Horizon 2020. Considered as the largest transnational research and innovation endeavor globally, Horizon Europe embodies the Union's unwavering commitment to advancing scientific frontiers and fostering breakthrough innovations. Central to its mission is the facilitation of research and innovation activities, predominantly channeled through open and competitive calls for proposals. Under the auspices of the European Commission, Horizon Europe operates with a mandate to propel scientific inquiry towards addressing societal challenges through civil applications exclusively.

The Horizon Europe regulation is deeply inspired by the paradigm of sustainable innovation. It aims to steer scientific and technological endeavors towards challenges and solutions that not only expand the boundaries of knowledge, science and technology but also address pressing societal needs in a sustainable manner. This entails fostering research initiatives that not only stimulate economic growth but also prioritize environmental conservation and societal wellbeing¹⁰.

The concept of "sustainable innovation" is expressly cited at least twice in the Horizon Europe Regulation:

- a) in recital 51 where the regulation established that the Horizon Europe program «should also seek to remove barriers and boost synergies between science, technology, culture and the arts to *obtain a new quality of sustainable innovation*. The measures taken to improve the involvement of citizens and civil society in the supported projects should be monitored»;
- b) in the establishment of Pillar III – Innovative Europe where it identifies as one of the European Institute of Innovation and Technology (EIT) areas of intervention the creation of «sustainable innovation ecosystems across Europe» which in Annex II of the regulation are further depicted as ecosystems through which «(i)n accordance with the EIT Regulation and the Strategic Innovation Agenda of the EIT, the EIT plays a reinforced role in strengthening sustainable challenges-based innovation ecosystems throughout Europe».

In addition, the Horizon Europe Regulation makes express reference to the United Nations Sustainable Development Goals (SDGs) in recital 2 and to the 2030 Agenda for Sustainable Development (the '2030 Agen-

¹⁰ See Regulation (Eu) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013. This seven-year program, synchronized with the EU's long-term budgetary plans, is endowed with a substantial financial allocation totaling 95.5 billion euros.

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da’), the SDGs and the Paris Agreement adopted under the United Nations Framework Convention on Climate Change (the ‘Paris Agreement’) in recital 10 establishing that the program implementation should «reinforce the pursuit of the SDGs and the commitment of the Union and its Member States to implementing the 2030 Agenda to achieving *its three dimensions – economic, social and environmental –* in a coherent and integrated manner» (emphasis added).

Finally, the Horizon Europe regulation foresees the organization of Missions which according to recital 24 are «high-ambition, wide-scale initiatives» that would enable the Horizon Europe program to achieve «a transformative and systemic impact for society in support of the SDGs, also through international cooperation and science diplomacy». According to article Missions shall use SDGs as sources for their design and implementation, be inclusive, encourage broad engagement and active participation from various types of stakeholders from the public and private sector, include citizens and end-users, have wide, scientific, technological, societal, economic, environmental or policy relevance and impact.

But the use of the research and innovation agenda for sustainable development has also a science diplomacy side and therefore it is one of the tools the EU intends to use to tackle the global divides produced by the technological and climate transitions¹¹.

In 2021, the European Commission adopted a communication on a global approach to research and innovation – the new European strategy for international cooperation. In 2022, the European Parliament and the EU Member States responded to the communication with respectively a resolution and a declaration by the Council presidency¹².

Indeed, the Global South is increasingly seen as vital for tackling environmental crises and social inequalities. Emphasizing social innovations aimed at changing current trajectories, there is a rising acknowledgment of the research and innovation potential in finding solutions. R&I can play

¹¹ C. Geiger, J.J. Bernd, *The right to research as guarantor for sustainability, innovation and justice in EU copyright law*, in *Intellectual Property Rights in the Post Pandemic World*, Edward Elgar Publishing, 2023, 138-169.

¹² EUROPEAN COMMISSION, *The Global Approach to Research and Innovation Europe’s strategy for international cooperation in a changing world*, 18.05.2021, COM(2021) 252 final, which calls for the mobilization of the world’s researchers and innovators as a crucial element for the well-being of citizens and future generations and it identifies cooperation across borders on a scale never seen before to develop innovative solutions to deliver just green and digital transitions in line with the sustainable development goals and to promote Europe’s resilience, prosperity, competitiveness, and economic social well-being.

a crucial role in making innovation not only geared towards sustainability but also more just. Yet the challenge lies in redirecting and transferring knowledge towards serving marginalized communities¹³. These communities, facing physical constraints and social exclusion, can benefit from sustainable innovation initiatives that offer novel solutions while promoting sustainability goals. Such initiatives demonstrate a commitment to social and environmental value, bridging divides, and promoting human and ecological sustainability.

However, gaps remain in understanding and measuring their impacts, particularly in areas that need to face ecological or technological challenges deriving either from their accelerated pace or the technical gaps these areas might still need to fill¹⁴. Systematic assessment tools are needed to inform policymaking effectively, guiding future interventions for sustainable development¹⁵.

2. Sustainable innovation as just innovation? The EU policy landscape on climate and energy justice

For sustainable innovation to represent a policy tool truly advancing sustainable development, all the possible dimensions and shades that sustainability or sustainable development can present must be embedded in its operationalization.

Thus this study interprets “sustainable innovation” as the principle

¹³ See *The AU-EU Innovation Agenda*, 19.07.2023, available at https://research-and-innovation.ec.europa.eu/system/files/2023-07/ec_rtd_au-eu-innovation-agenda-final-version.pdf. On a very innovative development approach based on shared entrepreneurship enabling group-owned or community-based businesses economically to empowering rural and urban Africa communities see U. Idemudia, K. Amaeshi, *Africapitalism*, Routledge, 2019. On the role that law can play in innovating development financing see K.E. Davis, *Financing Development as a Field of Practice*, in *Study and Innovation, Acta Juridica* (2009), 168.

¹⁴ See the European Commission and the High Representative adopted a joint communication to the European Parliament and the Council on a *Renewed Partnership with the Southern Neighbourhood*, 9 February 2021, JOIN(2021) 2 final. On 19 April 2021, the Council endorsed the renewed partnership, which aims to ‘address common challenges’ and ‘unlock the region’s economic potential for the benefit of its people’.

¹⁵ See R. Arocena, J. Suits, *Universities and Social Innovation for Global Sustainable Development as seen from the South*, in 162 *Technological Forecasting and Social Change* (2021), 120399; E. Ravazzoli, *Can Social Innovation Make a Change in European and Mediterranean Marginalized Areas? Social Innovation Impact Assessment in Agriculture, Fisheries, Forestry, and Rural Development*, in 13 *Sustainability* (2021), 1823.

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guiding the process of designing, selecting, financing, and developing innovating cutting-edge projects, products, processes, services, and technologies that not only (1) improve the competitiveness of a certain market or society by improving its technological or innovation strength (innovation impact), but also (2) respect human, fundamental, civil and social rights (rights impact); (3) reduce inequalities or divides the ecological and technological transitions are producing (social impact); (4) improve institutional capacity and multistakeholder cooperation in the stewardship of common essential resources (institutional/governance impact), (5) respect natural resources and other species regenerative capacities (environment, biodiversity, ecosystem impact), (6) take into account the impact on human and other species health (health impact), (7) improve the living conditions and quality of life of territorial, local, urban communities (territorial impact), (8) facilitate cultural, scientific and knowledge growth and exchange (cultural/knowledge impact), (9) factor in the interests of future generations (generational impact)¹⁶.

For sustainable innovation to become an effective approach or strategy to build an imaginary of collective (and not privatized) prosperity¹⁷, the above-mentioned impact dimensions of sustainable innovation must all be factored in and respected. To be sure, the respect for human rights and fundamental freedoms and even more importantly the orientation towards the eradication of social and economic inequalities caused by the ecological and technological transitions are quintessential¹⁸. However, the the governance

¹⁶ See C. Iaione, E. De Nictolis, A. Berti Suman, *The Internet of Humans (IoH): Human Rights and Co-Governance to Achieve Tech Justice in the City*, in 13(2) *Law & Ethics of Human Rights* (2019), 263-299; C. Iaione, *Urban Sustainable Development and Innovation Partnerships*, in 14 *Italian J. Pub. L.* (2022), 521; E. De Nictolis, C. Iaione, *The Science of Urban Regions: Public-Science-Community Partnerships as a New Mode of Regional Governance?*, in 24(2) *Theoretical Inquiries in Law* (2023), 141-162. Two Horizon 2020 Projects, EUARENAS.EU and Engage R&I, are testing this approach in Reggio Emilia and Rome. See also Article 80, paragraph 6, of the City of Reggio Emilia Regulation on Urban and Climate Justice and Democracy of 18 March 2024, available at <https://www.comune.re.it/amministrazione/documenti-e-dati/atti-normativi/regolamenti/regolamento-sulla-democrazia-e-la-giustizia-urbana-e-climatica-reggio-emilia>.

¹⁷ See M. Bartl, *Imaginaries of Prosperity as Constitutional Imaginaries*, *supra* note 7, who defines an imaginary of prosperity as «families of imaginaries and corresponding institutions and practices that share the background understanding of economy, law, politics, and government, woven by and through a story of prosperity, which places either private actors or collective actors in the driving seat towards a better future», at 364; A. Beckers, K.H. Eller, P. F. Kjaer, *The Transformative Law of Political Economy in Europe*, in 1(4) *European Law Open* (2022), 749-759.

¹⁸ See the European Commission, Secretariat-General, *European pillar of social rights*,

impact. is also growing in importance. The governance impact relies upon the concept of a meaningful engagement with stakeholders which implies a shared systemic stewardship of common essential resources. The Principles for Responsible Investment (PRI) define stewardship as «the use of influence by institutional investors to *maximize overall long-term value* including the *value of common economic, social and environmental assets, on which returns and clients' and beneficiaries' interests depend*»¹⁹. Of course, markets interpret this narrowly as entailing «asset managers actively *engaging with their investee companies* to set, among others, the business strategy, the risk management policies and procedures, or ESG considerations in the long-term interests of their clients»²⁰. And the risk for greenwashing and social washing as the EBA warns is behind the corner²¹. As a matter of fact, the true nature of stewardship entails maximizing the long-term value and this can only take place through governance approaches and mechanisms that enable the constant dialogue and even more importantly the partnership (as a benefit-sharing mechanism) with all the actors that can and should co-benefit of or co-manage those «common economic, social and environmental assets» because much like corporations and investors they are not only beneficiaries, but also custodians or stewards of these common assets²². And this is in line with the way legal theory has conceptualized stewardship so far in property, corporate and finance law²³.

Publications Office of the European Union, 2017, and E. Letta, *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to deliver a sustainable future and prosperity for all EU Citizens*, report presented to the European Council on 18 April 2024, who recalls the saliency of the European Pillar of Social Rights for a cohesive, people-centered Union and the Porto Social Agenda and the SURE plan, which introduced new principles and instruments to tackle unemployment and inequalities.

¹⁹ See how the PRI builds the concept of stewardship: <https://www.unpri.org/introductory-guides-to-responsible-investment/an-introduction-to-responsible-investment-stewardship/7228.article>

²⁰ See F.Vonner, J.F.Richard, J.Wilkinson, N.Rajewska, *Unleashing the Power of ESG Stewardship for a Sustainable Tomorrow*, 21 May 2024, available at <https://securities.cib.bnpparibas/unleashing-the-power-of-esg-stewardship-for-a-sustainable-tomorrow/>

²¹ See the EBA *Guidelines on Greenwashing*, p. 18, stating that «Engagement with stakeholders was also assessed as very prone to greenwashing».

²² See S.R. Foster, C. Iaione, *The Co-Cities*, MIT Press, 2022.

²³ W.N.R. Lucy, C. Mitchell, *Replacing Private Property: The Case for Stewardship*, in 55 *Cambridge Law Journal* (1996), 566-584; R.G. Eccles, G. Serafeim, *The Big Idea*, in *Harvard Business Review*, 2013; G. Serafeim, *Investors as Stewards of the Commons?*, in 30(2) *Journal of Applied Corporate Finance* (2018), 8-17; D. Katelouzou, A. Klettner, *Sustainable Finance and Stewardship: Unlocking Stewardship's Sustainability Potential*, in D. Katelouzou, D.W. Puchniak (eds.), *Global Shareholder Stewardship*, Cambridge University Press, 2022, 549-571; J.N. Gordon, Sys-

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This dimension of impact rooted in engagement with stakeholders and shared systemic stewardship can be better operationalized and made more robust through reference to the ongoing discussion within the EU law and policy and scholarly debate on the need for constitutionalizing the just ecological, technological, and energy transition principle. The justice dimension might become more central in guiding the implementation of the principles of sustainable innovation if a reading of the EU constitutional framework can allow for its recognition.

A whole range of serious environmental, energy and technological challenges are threatening the health of the planet and the well-being of some communities and groups more than others. These challenges not only endanger the environment, the ecosystems, and biodiversity, but they also have severe consequences on human health, the economy, institutional capacity and democratic quality, the production of science and knowledge, and social cohesion.

Addressing these challenges posed by climate and technological transitions, therefore, requires not only a deep understanding of natural and technological phenomena but also a thorough analysis of the multidimensional impacts that they have on society and institutions, which often become inequitable and unbearable for some more vulnerable social groups and communities²⁴.

Vulnerable communities, characterized by inadequate infrastructure, as well as socio-economic groups with fewer resources, are particularly exposed to the impacts of climate change, simultaneously finding themselves in conditions of lower capacity to address them. Socially marginalized groups and those facing unemployment are among the most vulnerable to climate-related risks²⁵.

The EU has positioned itself as a global frontrunner in confronting

tematic Stewardship, in 47 *Journal of Corporate Law* (2022), 627; C. Consolandi, J.P. Hawley, *From ESG to Sustainable Impact Finance: Moving Past the Current Confusion*, 2024, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4689377.

²⁴ V. Karageorgou, *The EU Just Transition Concept and Its Application in the Case of the Just Transition Mechanism*, in 20 *Journal for European Environmental and Planning Law* (2023), 287–320.

²⁵ Vulnerable communities can be defined as groups of people who, due to their physical, social, economic, and environmental characteristics, are more susceptible to experiencing losses from hazardous events such as natural disasters and climate changes. Their vulnerability is influenced by urbanization, features of the built environment, socio-economic composition, and urban governance. This perspective is reflected in the Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction, compiled in 2016 by the UNDRR (United Nations Office for Disaster Risk

multifaceted challenges such as climate change, energy transition, and technological advancements, all while steadfastly ensuring a fair transition for its diverse array of citizens, with a particular emphasis on safeguarding the interests of vulnerable and affected communities²⁶.

However, there is no consensus on how climate, energy, and technological justice, some of the core tenets of the current EU policy discourse, shall be interpreted and whether it can be considered as a legal principle enshrined within the EU constitutional framework. As Mazzucato would put it, the Treaty on the European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU) need a mission-oriented reading in order to establish the constitutionality of an impact-based just sustainable innovation principle which foresees multistakeholder engagement and stewardship of common essential resources like the ecosystems as its distinctive element. If it was possible to establish the constitutional nature of this principle, just sustainable innovation could stand as rock-solid pillar beyond the current policy cycle, steering the formulation and implementation of innovation policies and funding schemes aimed at addressing climate challenges, fostering sustainable energy transition, and promoting equitable access to digital and technological essential infrastructure across member states²⁷.

2.2. *Climate and intergenerational justice*

If sustainable innovation has to primarily deliver on the environmental side, it cannot overlook the inequalities that the ecological crisis and transitions are already determining. Climate change represents one of the greatest environmental threats of our time, with rising temperatures, increasingly frequent extreme weather events and devastating impacts on ecosystems and communities. Reports from the Intergovernmental Panel on Climate Change (IPCC) emphasize that, despite significant reductions in carbon dioxide (CO₂) emissions and other greenhouse gases, it may take an additional 20–30 years for global temperatures to stabilize²⁸. Furthermore, according to the 2020 report from the Euro-Mediterranean Center on Climate Change

Reduction), available at <https://www.undr.org/publication/report-open-endedintergovernmental-expert-working-group-indicators-and-terminology>.

²⁶ E. Chiti, *Managing the Ecological Transition of the EU: The European Green Deal as a Regulatory Process*, in 59 *Common Market Law Review* (2022), 19–48.

²⁷ V. Karageorgou, *The EU Just Transition Concept and Its Application in the Case of the Just Transition Mechanism*, *supra* note 24, at 320.

²⁸ IPCC, *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II*

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(CMCC), the Mediterranean area will experience a warming of 20% higher than the global average²⁹. Climate change is not an irreversible phenomenon against which there are no defenses, but rather a complex process that interconnects socio-economic and natural dynamics. On one hand, human actions and business operations exert a significant influence on greenhouse gas emissions, consequently shaping the future course of the climate. On the other hand, the ongoing transformations influence the decisions of economic actors, prompting them to formulate strategies to mitigate the effects of climate change and adapt to new environmental conditions.

The EU policy landscape provides a robust standard of protection for the environment and solid grounds for the efforts to counteract climate change causes and effects. An important aspect that contributes to this standard is the legal status afforded to environmental principles in the EU treaties and their implementation through the case law of the CJEU. Environmental principles are grand policy principles, vague and abstract in nature, that are supposed to guide environmental decision making. Some of them are legally recognized by the EU Treaties at art. 191(2) of the TFEU: «Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay»³⁰.

The Treaties thus explicitly mention as principles the precautionary principle, the preventative principle, the principle of rectification of pollution at source and the principle of polluter pays. Based on the Treaties' interpretation in their judicial reasoning, the CJEU has produced an extensive case law on the environmental principles. Mapping the doctrinal interpretation this case law, Eloise Scotford³¹ identifies two additional principles: the integration principle and the principle of sustainable development.

Article 3 of the TEU grounds the European Union's commitment to sustainability by recognizing the principle of sustainable development³². This

and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, H. Lee, J. Romero (eds.), IPCC, Geneva, Switzerland, 2023, 35-115.

²⁹ D. Nicoli, *The Euro-Mediterranean Center on Climate Change (CMCC) decadal prediction system*, in 16(1) *Geoscientific Model Development* (2023), 179-197.

³⁰ Art. 191, paragraph 2, TFEU.

³¹ E. Scotford, *Environmental Principles and the Evolution of Environmental Law*, Hart Publishing, 2017.

³² S. Schacherer, *Sustainable Development in the EU Legal Order*, *supra* note 1, at 100-147; L. Squintani, *Addressing legal barriers to sustainability in the European Union*, in K. de Graaf, B.

fundamental principle underscores the EU's dedication to advancing sustainable development in Europe, emphasizing the imperative of integrating environmental protection into EU policies.

The integration principle entails that environmental protection should be integrated into other policy areas³³. Article 11 of the TFEU in establishing the principle of integration emphasizes the critical need to embed environmental considerations into all policy spheres to effectively promote sustainable development. By prioritizing a high level of environmental protection and improvement, the EU endeavors to combat climate change and uphold environmental justice, thereby striving to achieve a delicate balance between economic progress, social well-being, and environmental preservation. Moreover, the principle of integration, as enshrined in Article 11 of the TFEU, underscores the inherent interconnectedness of environmental, social, and economic objectives. This principle advocates for the seamless integration of environmental concerns into various policy domains, including social and economic policies, to achieve holistic and sustainable outcomes. By adopting a multidimensional approach that considers environmental, social, and economic factors in tandem, the EU aims to tackle complex challenges such as climate change comprehensively, fostering synergies between different policy areas to maximize impact and effectiveness.

The precautionary principle is a general administrative law and EU law principle, widely adopted to orientate risk management in a wide variety of EU law and policy areas, from pharmaceuticals to pesticides. However, as mentioned earlier its explicit reference is to environmental policy. The CJEU construed the precautionary principle as a general EU law principle by combining article 191, paragraph 2, with article 11 that states that environmental policy must be integrated with other areas of policy making (the integration principle). The fact that the precautionary principle is a core component of environmental policy, that ought to be integrated in other areas of policy, it derives that the precautionary principle must be integrated as well³⁴.

The precautionary principle requires or gives discretion³⁵ to the competent EU authorities to take appropriate measures to prevent potential risks to health, safety, and the environment that a legal measure would imply. The

Marseille, S. Pregal, R. Widershoven, H. Winter (eds.), *Grensoverstijgende rechtsbeoefening: Liber amicorum Jan Jans*, Uitgeverij Paris BV, 2021, 53-59.

³³ E. Scotford, *Environmental Principles and the Evolution of Environmental Law*, Hart Publishing, 2017, 7.

³⁴ P. Craig, *EU Administrative Law*, Oxford University Press, 2018, 697.

³⁵ Id., at 698.

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risk assessment must be based on scientific evidence. If the scientific research cannot assess with precision the potential risk, then the authority must adopt the conservative and restrictive option amongst the measures available, unless they lack objectivity or are discriminatory³⁶.

The coordinated reading of the integration and precautionary principle with Article 9 of the TFEU which introduces a crucial social clause that mandates the Union to also consider social objectives, such as employment, social protection, and the fight against social exclusion, when defining and implementing its actions, should be solid enough to ground a climate justice principle. While initially conceived to safeguard social objectives in relation to economic policies, this clause extends its reach to encompass environmental policies, including those aimed at mitigating climate change. By advocating for a high level of social protection and inclusion, the EU seeks to ensure that the benefits of environmental policies are equitably distributed across society, thereby promoting social justice alongside environmental sustainability.

However, a principle of climate justice³⁷ and equity is yet to emerge in EU legal doctrine. However, it is widely advocated for by scholarly debates echoing societal claims, and by justice advocates. A group of judges in the early 2000 published a Judicial Handbook on Environmental Law to advocate for an environmental justice and equity principle (alongside other environmental principles such as prevention, precaution, polluter pays, that are part of EU law) to be adopted by the judiciary worldwide³⁸. In the current scholarly commentary, a certain amount of writing is dedicated to the principle of intergenerational equity and the principle of sustainable development are environmental principles that have relevance in law³⁹. Several State Constitutions or Constitutional jurisprudence in Europe is articulating the responsibilities of States with regards to environmental protection and climate change mitigation and adaptation, to protect the rights of future generations⁴⁰.

³⁶ *Id.*, at 699.

³⁷ C. Armeni, *What justice? The scope for public participation in the European Union Just Transition*, in 60(4) *Common Market Law Review* (2023), 917-924

³⁸ UNEP, *Judicial Handbook on Environmental Law* (UNEP 2005). See mention of the handbook in E. Scotford, *Environmental Principles Across Jurisdictions: Legal Connectors and Catalysts*, in E. Lees, J.E. Viñuales (eds.), *The Oxford Handbook of Comparative Environmental Law*, Oxford University Press, 2019, at 664.

³⁹ E. Fisher, E. Scotford, E. Barritt, *The Legally Disruptive Nature of Climate Change*, in 80 *The Modern Law Review* (2017), 173.

⁴⁰ I. Mumta, M. Montini, S. Bagni, *Towards an EU fundamental charter for the Rights of*

Notably, the Italian Constitutional amendment of 2021 that modified article 9 of the Italian Constitution introducing the statement that the Republic ought to protect the environment in the interest of future generations⁴¹. And the German Constitutional Court ruling of March 21, 2021 that declared the German climate change act unconstitutional in the part that lacks specific and detailed instructions on how to reduce emissions after 2030, thereby infringing on the rights of future generations⁴². The application included complaints group of citizens of Bangladesh and Nepal, therefore opening to the issue of transboundary intergenerational equity, albeit those complaints were eventually dismissed⁴³.

In EU law specifically, the sustainable development principle is, in Eloise Scotford's words, 'overarching provisions for EU law as a whole'⁴⁴, while the intergenerational equity principle is less pronounced in the EU legal doctrine⁴⁵. EU law scholars Markus Gehring and Alexandra Harrington reconstructed the roots of intergenerational equity and sustainable development, in connection with intergenerational justice and solidarity in EU treaties and primary law. They note that intergenerational solidarity is enshrined in the EU policy under the Pillar of Social Rights⁴⁶ and it was well included in the Charter of Fundamental Rights and Freedoms of the EU,

Nature: Integrating nature, people, economy, in J. García Ruales, K. Hovden, H. Kopnina, C.D. Robertson, H. Schoukens (eds.), *Rights of Nature in Europe*, Routledge, 2024, 281-302; A. Donati, *Future Generations Under EU Law*, in *Representing the Absent*, Nomos, 2023, 265-290.

⁴¹ M.A. Tigre, *Guest Commentary: New Italian Constitutional Reform: What It Means for Environmental Protection, Future Generations & Climate Litigation*, in *Columbia Law Sabin Center Blog*, 2022, available at <https://blogs.law.columbia.edu/climatechange/2022/04/08/guest-commentary-new-italian-constitutional-reform-what-it-means-for-environmental-protection-future-generations-climate-litigation/>.

⁴² S.Theil, *Cautious Scrutiny: The Federal Climate Change Act Case in the German Constitutional Court*, in 86 *The Modern Law Review* (2023), 263; A. Alemanno, *Protecting Future People's Future: How to Operationalise Present People's Unfulfilled Promises to Future Generations*, in 14(4) *European Journal of Risk Regulation* (2023), 641-655.

⁴³ A. Buser, *Of Carbon Budgets, Factual Uncertainties, and Intergenerational Equity—The German Constitutional Court's Climate Decision*, in 22 *German Law Journal* (2021), 1409.

⁴⁴ E. Scotford, *Environmental Principles Across Jurisdictions: Legal Connectors and Catalysts*, in E. Lees, J.E.Viñuales (eds.), *The Oxford Handbook of Comparative Environmental Law*, Oxford University Press, 2019, 671.

⁴⁵ The principle of intergenerational equity is more pronounced in other doctrines E. SCOTFORD, *Environmental Principles and the Evolution of Environmental Law*, Hart Publishing, 2017.

⁴⁶ M.W. Gehring, A.R. Harrington, *Intergenerational Equity and the European Constitution*, in M.C. Cordonier Segger, M. Szabó, A.R. Harrington (eds.), *Intergenerational Justice in Sustainable Development Treaty Implementation*, Cambridge University Press, 2021, 285.

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at Article 37 on environmental protection⁴⁷. Canadian legal scholar Lynda Collins reads EU environmental policy against the backdrop of the doctrine of planetary obligations (corresponding to the planetary rights of future generations) as elaborated by international law scholar Edith Weiss⁴⁸. She argues that, albeit being neglected in the treaties, intergenerational equity emerges in regulation and case law. The implementation of duties of use, a key component of intergenerational equity, is traceable in case law on resources conservation, such as the EU Biodiversity and wild species directives, as well as in the waste reduction directives. In relation to equitable use, EU cohesion policy (addressed later in this paragraph under the rubric of territorial justice) as well climate change law represents an example. Finally, in relation to the dimension of access, the EU procedural environmental rights including notice, information, consultation, and assessment are consistent with the third dimension of intergenerational equity duty of use, which is the obligation to ensure access⁴⁹.

A principle of intergenerational justice also bears a component connected with public participation to decision making. Public participation in EU law is often considered a weakness in EU politics, as it is mostly organized around interest groups and structured examples of lay participation are scarce⁵⁰. The pillar of public participation in EU environmental law is the Aarhus Regulation, which implements the Aarhus Convention at the internal level. The Convention gives legitimacy to establishing practices of procedural access, but also more advanced examples of proactive contribution of societal actors such as citizen science and citizen sensing⁵¹, albeit not constituting a legal mandate for EU Member States. The topic of public participation does not entail a distributive component in a definition of climate justice as is advocated for by climate advocates promoting litigation in different parts of the world. The climate justice debate, in coherence with the environmental justice framework, highlights the disproportionate impact that climate change has on different populations, globally and within domestic contexts and social groups. The strive towards climate change mitigation and adaptation, to be defined as climate justice, should therefore be

⁴⁷ Id., at 286.

⁴⁸ L. Collins, *Environmental Rights for the Future? Intergenerational Equity in the EU*, in 16 *Review of European Community & International Environmental Law* (2007), 322.

⁴⁹ Id., at 327.

⁵⁰ M. Lee, *EU Environmental Law, Governance and Decision-Making*, Hart Publishing, 2014, *passim*.

⁵¹ A. Suman, *Citizen Sensing from a Legal Standpoint: Legitimizing the Practice under the Aarhus Framework*, in 18 *Journal for European Environmental & Planning Law* (2021), 8.

pursued through the lens of not only procedural but also recognitional and distributional concerns⁵² or otherwise an equality lens⁵³. Three applications to the European Court of Human Rights have been relinquished to the Court's Grand Chamber on cases concerning a climate justice approach to state responsibilities for climate change. In *Carême v. France*, the applicant was the Mayor of a coastal city in France, Grand Synthe, threatened by sea level rise and floodings⁵⁴. The other cases see as applicants a group of elderly women against the State of Switzerland and a group of Portuguese youth against 33 Contracting States⁵⁵. The outcome of these cases, decided in April 2024, can tell us something about the way that the legal doctrine will develop in relation to climate justice. *Careme v France* and *Duarte Agostinho and Others v. Portugal and Others* were declared inadmissible due to standing and jurisdiction issues. The *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* was instead successful for the applicant. Even though the EU is not a contracting party to the ECHR, as Piet Eeckhout noted, the recognition of climate policies within the realm of the right to life and right to private and family life affects the EU insofar as those rights are protected by EU law, pursuant to Article 7 of the EU Charter of Fundamental Rights and Article 52(3) of the EU Charter of Fundamental Rights⁵⁶.

2.2. Energy justice

Another way to operationalize the justice dimension of sustainable innovation is by underlying its relevance also within the frame of the ongoing conversation on energy democracy and justice⁵⁷. The connection with this

⁵² P. Kashwan, *Climate Justice in the Global North*, in 5 *Case Studies in the Environment* (2021), 1125003.

⁵³ J.A. Goldston, *Climate Litigation through an Equality Lens*, in C. Rodríguez-Garavito (ed), *Litigating the Climate Emergency*, Cambridge University Press, 2022, 132.

⁵⁴ M. Torre-Schaub, *The Future of European Climate Change Litigation*, in *Verfassungsblog: On Matters Constitutional*, 2022, available at https://intr2dok.vifa-recht.de/receive/mir_mods_00013492.

⁵⁵ G. Liston, P. Kingsley Clark, *Climate Litigation before International Tribunals: The Six Portuguese Youth v. 33 Governments of Europe Case before the European Court of Human Rights*, in C. Rodríguez-Garavito (ed), *Litigating the Climate Emergency*, *supra* note 53, 140.

⁵⁶ P. Eeckhout, *From Strasbourg to Luxembourg?: The KlimaSeniorinnen judgment and EU remedies*, *VerfBlog*, 2024/6/05, <https://verfassungsblog.de/from-strasbourg-to-luxembourg/>

⁵⁷ A. McHarg, *Energy justice: understanding the 'Ethical Turn' in energy law and policy*, Oxford University Press, 2020, *passim*; R.J. Heffron, *Applying energy justice into the energy transition*, in 156 *Renewable and Sustainable Energy Reviews* (2022), 111936; L. Kaschny, *Energy Justice and*

debate is important for the ecological relevance of energy systems. The energy transition towards an energy system that is decentralized and based on a renewable energy is very much connected and functional to the climate transition⁵⁸.

But access to, stewardship or ownership of decentralized networks and renewable energies imply also access to, stewardship or ownership of the technologies enabling these innovative energy systems. Thus, they bear also a technological and digital justice dimension⁵⁹. EU constitutional or primary law, much like CJEU case law provides at this point solid basis for the recognition of the “fifth freedom” and the so-called “commons of the mind” which imply to share knowledge and therefore open and ultimately just technological innovation⁶⁰.

We will focus here on the EU constitutional clause of energy solidarity 194(1)⁶¹ leaving aside the secondary law provided by the REDII and REDIII directives and the REPowerEU legislative package and program⁶². But we will focus on case law that supports the idea that energy solidarity is an

the Principles of Article 194 (1) TFEU Governing EU Energy Policy, in *Transnational Environmental Law* (2023), 1-25; R. Sidortsov, D. McCauley, *Energy Justice*, in *Theorising Justice*, Bristol University Press, 2023, 171-190.

⁵⁸ C. Dupont, K. Kulovesi, H. van Asselt, *Governing the EU's climate and energy transition through the 2030 Framework*, in 29 *Rev. Eur. Comp. & Int'l Envtl. L.* (2020), 147.

⁵⁹ On technological justice see C. Iaione, E. De Nictolis, A. Berti Suman, *The Internet of Humans (IoH): Human rights and co-governance to achieve tech justice in the city*, *supra* note 16, 263. On the digital justice dimension see G. De Gregorio, *The rise of digital constitutionalism in the European Union*, in 19(1) *International Journal of Constitutional Law* (2021) 41; O. Pollicino, *Judicial protection of fundamental rights on the internet: a road towards digital constitutionalism?*, Bloomsbury Publishing, 2021, *passim*.

⁶⁰ C. Geiger, B.J. Jütte, *The right to research as guarantor for sustainability, innovation and justice in EU copyright law*, in T. Pihljarinne, J. Mähönen, P.N. Upreti (eds.), *Intellectual Property Rights in the Post Pandemic World*, 2023, Edward Elgar Publishing, 138-169. See also Judgment of the Court (Grand Chamber), *SAS Institute Inc. v World Programming Ltd*, case C-406/10, 2 May 2012, G. Ghidini, E. Arezzo, *Dynamic Competition in Software Development: How Copyrights and Patents, and Their Overlapping, Impact on Derivative Innovation*, in *Queen Mary Journal of Intellectual Property* (2013), 278-295.

⁶¹ L. Kaschny, *Energy Justice and the Principles of Article 194(1) TFEU Governing the EU Energy Policy*, in 12(2) *Transnational Environmental Law* (2023), 270-294.

⁶² C. Iaione, E. De Nictolis, *Le comunità energetiche tra democrazia energetica e comunanza d'interessi*, in 4 *Diritto e Società* (2022), 589; G. Koukoufakis, H. Schockaert, D. Paci, F. Filipidou, A. Caramizaru, N. Della Valle, C. Candelise, I. Murauskaite-Bull, A. Uihlein, *Energy Communities and Energy Poverty. The Role of Energy Communities in Alleviating Energy Poverty*, Science for Policy report by the European Commission Joint Research Centre (JRC), 2023, at 6 and 11.

undeniable pillar of the energy democracy and justice contributing to build the justice dimension of sustainable innovation⁶³.

The concept of energy democracy has surfaced recently in social sciences, postcolonial studies, environmental policy⁶⁴. The concept of energy democracy and energy justice are sometimes used interchangeably. However, some authors do underline important differences between them. The concept of energy democracy emerges from the literature on energy justice which itself stemmed from the literature on environmental justice⁶⁵. The literature on energy democracy is preoccupied with claims of dissatisfaction with the decision-making structure around energy, because it justifies lower standards of democratic accountability, transparency and scrutiny with the high technical nature of issues around energy provision, that consequently remain concentrated at the top level of politics and bureaucratic hierarchy⁶⁶. This is ill suited with the growing public awareness around climate change and the need of an energy renewable transition. In democratic studies, the concept of energy democracy has been associated with the type of democracy defined associative democracy, which emphasizes the role of civil society, local control and ownership of energy sources⁶⁷. Another useful association is with material democracy, which emphasizes the entrenched relationship between material resources and politics in a democratic society⁶⁸. Public law scholar Aileen McHarg noted that, from a legal standpoint, there is uncertainty surrounding the concrete reform proposals that are needed to realize an energy democracy grounded in the community led production of energy⁶⁹. This is especially relevant when there are divergent views around ener-

⁶³ Judgment of the Court (Grand Chamber), 15 July 2021, Case C-848/19, Germany v. Poland.

⁶⁴ B. van Veelen, D. van der Horst, *What is energy democracy? Connecting social science energy research and political theory*, in 19 *Energy Research & Social Science* (2018), 46; K. Szulecki, *Conceptualizing energy democracy*, in 21 *Environmental politics* (2018), 27. A. Dawson, *People's power: reclaiming the energy commons*, OR Books, 2020.

⁶⁵ A. McHarg, *Community Benefit through Community Ownership of Renewable Generation in Scotland*, in L.K. Barrera-Hernández (ed.), *Sharing the Costs and Benefits of Energy and Resource Activity: Legal Change and Impact on Communities*, Oxford University Press, 2016, 313.

⁶⁶ S. Welton, *Grasping for energy democracy*, in 116 *Michigan Law Review* (2018), 518 and 598; K. Szulecki *Conceptualizing energy democracy*, *supra* note 64.

⁶⁷ B. van Veelen, D. van der Horst, *What is energy democracy? Connecting social science energy research and political theory*, *supra* note 58, 53.

⁶⁸ *Id.*, 30.

⁶⁹ Aileen McHarg illustrates the Scottish example where governmental policy on community benefit agreements in renewable energy projects as well as direct ownership of implants by local communities. Overall, she notes, the phenomenon in Scotland is small albeit

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gy democracy claims⁷⁰. Energy law scholar Shelley Welton identified three different visions of energy democracy: a) energy democracy as a consumer's choice⁷¹; b) energy democracy as decentralized/local control of energy⁷²; c) energy democracy as access to process around energy provision at the central level⁷³.

These visions would need serious legal reforms to be realized. For example, the second vision would require the municipalization of local utilities which in the US is a long and costly process involving a referendum and it would require the creation of community energy infrastructures like microgrid⁷⁴. These visions also raise questions. For example, they assume that locally controlled utilities or local communities are inherently committed to the renewable energy transition.⁷⁵ They also present obstacles, such as the access to financial capital for upfront costs that vulnerable communities would not have⁷⁶. In the EU, some of the issues raised by those few scholars addressing energy democracy concepts have been addressed by the EU legislation and policies on energy communities, as seen below in this article. The field is constantly growing and changing and more empirical research as well as conceptual development is needed. Energy justice literature is a fast-growing field of research. In the US, is rooted in social movements and advocacy movements and it had a policy uptake in the Biden Administration. The Initiative for Energy Justice, an organization founded by lawyers engaged in advocacy and research around it defines it as: «Energy justice refers to the goal of achieving equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on those disproportionately harmed by the energy system. Energy justice explicitly centers the concerns of communities at the front-

with notably successful case studies such as the isle of Eigg where community energy allowed residents to become self-sufficient and have better access to energy. Or the windfarm on the Isle of Gigggha where revenues allowed the survival of the school and the creation of some jobs. The model of direct ownership, compared to the community benefit agreements seems to be more effective from the perspective of energy self-sufficiency in remote areas, counteracting energy poverty and local economic development. A. McHarg, *Community Benefit through Community Ownership of Renewable Generation in Scotland*, *supra* note 65, 304.

⁷⁰ S. Welton, *Grasping for energy democracy*, *supra* note 66, 599.

⁷¹ *Id.*, 603–605.

⁷² K. Szulecki, *Conceptualizing energy democracy*, *supra* note 64.

⁷³ S. Welton, *Grasping for energy democracy*, *supra* note 66, 627.

⁷⁴ *Id.*, 613–618.

⁷⁵ *Id.*, 612.

⁷⁶ A. McHarg, *Community Benefit through Community Ownership of Renewable Generation in Scotland*, *supra* note 59, 304–305.

line of pollution and climate change (“frontline communities”), working class people, indigenous communities, and those historically disenfranchised by racial and social inequity. Energy justice aims to make energy accessible, affordable, clean, and democratically managed for all communities». ⁷⁷

The Biden Administration appointed an energy law professor, co-founder of the Initiative for Energy Justice, as the Director of the Office of Energy Justice and Equity inside the Department of Energy ⁷⁸. Shalanda Baker notes that the main concern of energy justice literature is fully coherent with the ones of environmental justice and focus on the fact that energy policy should prioritize vulnerable communities, mainly communities of color, are historically disproportionately afflicted by the negative implications of the current energy system. Health costs, air pollution, cost of energy. An energy justice framework is one that acknowledges these historical inequalities and thus prioritizes these communities in the transition to clean energy and in climate change mitigation and adaptation policies ⁷⁹. As Annalisa Savaresi observed, legal scholarship so far has mostly conceptualized energy justice as a procedural justice issue, overlooking other dimensions such as distributive and recognitional ⁸⁰. In the US on the other hand, the procedural issues are left behind while reparational and distributive justice claims are prioritized. This may create issue as it goes on, because a distributive energy policy that does not foresee how to properly engage the affected communities in the decision-making process or that does not support vulnerable communities accessing the opportunities structured by the policy is not going to work well ⁸¹.

At the EU level, an energy policy that aims to pursue energy justice would have to consider the existing framework on vulnerable consumers. As Toggenkamp and Diestelmeier noted, there are issues related for example to the protections to be granted to energy users that choose not to participate to an energy community or whether the protections for vulnerable consumers of the energy provider of last resort apply to energy communities.

⁷⁷ *Initiative for Energy Justice, Initiative for Energy Justice*, s.d. <https://iejusa.org/>

⁷⁸ See www.energy.gov/justice/office-energy-justice-and-equity.

⁷⁹ S.H. Baker, *Revolutionary Power: An Activist's Guide To The Energy Transition*, Island Press, 2021.

⁸⁰ A. Savaresi, *Community Energy and a Just Energy Transition: What We Know and What We Still Need to Find Out*, in I. del Guayo et al. (eds.), *Energy Justice and Energy Law*, Oxford University press, 2020, 67-82.

⁸¹ A. Dolezal, *Power to the People: Distributing the Benefits of a Clean Energy Transition through Equitable Policy, Legislation, and Energy Justice Initiatives*, in 106 *Minnesota Law Review* (2023), 2487.

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In the end, they argue, it will come down to each Member State definition of energy poverty.⁸²

The question to be asked here is whether the EU has already provided a definition of energy justice as a form of social justice that Member States have the duty to provide under the Lisbon Treaties and CJEU case law. The CJEU affirmed that energy solidarity between Member States is a justiciable principle of EU energy law pursuant to the Lisbon Treaties. Art. 194 TFUE states in the first paragraph that: «In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to:

- (a) ensure the functioning of the energy market;
- (b) ensure security of energy supply in the Union;
- (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and
- (d) promote the interconnection of energy networks»⁸³.

The spirit of solidarity among Member State was the object of the case law that established energy solidarity, *Germany V Poland*. The case concerned the OPAL Pipeline, running from Russia to Western Europe. When the European Commission approved a decision by Germany to lift restrictions on third party access to the pipeline, which could now be used by the majority Russian government owned company Gazprom. Poland challenged the decision on the ground that it violates energy solidarity. This is because the access of Gazprom to the pipeline would have hurt Poland that could now be bypassed as a transit route and increased Poland and EU's reliance on one supplier, thereby violating both energy security and energy solidarity obligations. The Court ruled in favor of Poland, overturning the previously accepted definition of energy solidarity: «the principle of solidarity entails rights and obligations both for the European Union and for the Member States. On the one hand, the European Union is bound by an obligation of solidarity towards the Member States, and, on the other hand, the Member States are bound by an obligation of solidarity between themselves and with regard to the common interest of the European Union and the policies pursued by it»⁸⁴.

The decision was appealed by Germany, that questioned the justiciability of the principle of energy solidarity. The Court upheld the judgement

⁸² Id., 177.

⁸³ Art. 194 TFUE.

⁸⁴ Case T-883/16, *Poland v. Commission*, paragraph 70.

and stated that the principle of solidarity between Member States is a general principle of EU law, of which the principle of solidarity in energy is an expression⁸⁵. It further argued that the principle of solidarity in energy apply to the whole of energy policy of the European Union. Thus, whenever EU institutions take a decision regarding energy policy, they have the obligation to consider impacts on all Member States⁸⁶: «Solidarity is what forms the basis of all of the objectives of the European Union’s energy policy, serving as the thread that brings them together and gives them coherence»⁸⁷.

3. Empowering vulnerable communities through impact-based stewardship. Evidence from the EU sustainable governance, sustainable finance, just transition, integrated local development regulatory framework

The previous analysis leads to the conclusion that the justice dimension of sustainable innovation is not established in EU constitutional doctrine, nor homogenously interpreted as enabling a governance impact rooted in stakeholders’ engagement and shared systemic stewardship of common resources as requested by the PRI. In turn, the EU Commission’s effort to develop secondary law that associates sustainability to a true governance impact is more straightforward.

The effort is evident especially if connected to the recognition and role of the vulnerable or affected communities if one turns the look towards the EU Commission initiatives on sustainable finance and sustainable corporate governance enabling private investment on sustainability, on one side, and the policy framework on public investment for the just transition and the integrated local development on the other side. In the next two sections an explanation of how these regulations and policies might be connected and become relevant for vulnerable communities is provided. While historically environmental concerns have been paramount, they show that there is a growing recognition of the need to include social and more importantly governance dimensions. This shift is evident in key EU primary law such as the Corporate Sustainability Reporting Directive (CSRD), Sustainable Finance Disclosure Regulation (SFDR), and the EU Taxonomy Regulation,

⁸⁵ M. Münchmeyer, *The principle of energy solidarity: Germany v. Poland*, in 59(3) *Common Market Law Review* 2022, 915-932, especially 921.

⁸⁶ *Id.*, 922.

⁸⁷ Case C-848/19 P, *Federal Republic of Germany v European Commission*, para 34.

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and the policy and regulatory landscape on social and territorial cohesion through the EU structural funds regulations.

3.1. On engagement and stewardship as a defining feature for sustainable governance and sustainable finance

The EU is nudging the private sector, both corporate and financial operators, to engage with stakeholders even though with a different degree of intensity.

First, the EU sustainable governance framework is comprised of several key components aimed at promoting transparency, accountability, and sustainability in corporations' activities. Initiated with the adoption of the Non-Financial Reporting Directive (NFRD) in 2014, the framework has evolved with the Corporate Sustainability Reporting Directive (EU) 2022/2464 which mandates sustainability reporting for a significant number of EU companies. This directive extends reporting obligations to a broad spectrum of companies, emphasizing sustainability and introducing the concept of "double materiality", requiring disclosure of both environmental and social impacts. This Double Materiality approach ensures comprehensive insights into a company's sustainability performance, including its effects on vulnerable communities.

Indeed, the CSRD considers as one of the main recipients of the informational obligation posed towards corporations the "affected communities", to which the European Sustainability Reporting Standard no 6, according to which corporations under CSRD have: «to identify and manage any material actual and potential impacts on affected communities in relation to: (a) Impacts on communities' economic, social and cultural rights (adequate housing, adequate food, water and sanitation, land-related and security-related impacts); (b) Impacts on communities' civil and political rights (freedom of expression, freedom of assembly, impacts on human rights defenders); (c) Impacts on particular rights of Indigenous communities (free, prior and informed consent, self-determination, cultural rights)»⁸⁸.

More recently, the EU sustainable governance framework has been enriched by the Corporate Sustainability Due Diligence Directive (CSDDD). First, it requires companies to conduct risk-based human rights and environmental due diligence on the actual and potential human rights adverse

⁸⁸ EFRA, European Sustainability Reporting Standards n.6 Affected Communities, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022L2464>.

impacts and environmental adverse impacts, with respect to their own operations, the operations of their subsidiaries, and the operations carried out by their business partners in the chains of activities of those companies. Companies are liability for violations of this obligations. Second, CSDDD obliges companies to meaningfully engage with stakeholders and according to recital 65 «particular attention should be paid to the needs of *vulnerable stakeholders*, and to overlapping vulnerabilities and intersecting factors, including by taking into account potentially affected groupings or communities, for example those protected under the UN Declaration on the Rights of Indigenous People and those covered in the UN Declaration on Human Rights Defenders». Article 13 provides that companies take appropriate measures to carry out effective engagement with stakeholders.

The interesting thing about the CSDDD is that stakeholders are not only those who are affected or have reasonable grounds to believe that they might be affected by an adverse impact, and the legitimate representatives of such persons on behalf of them, such as civil society organisations and human rights defenders, but also Indigenous Peoples, local communities, farmers, and other subjects potentially affected by a company's (and its partners) operations, as well as trade unions and workers' representatives, civil society organisations that are active and experienced in related areas where an adverse environmental impact may be produced⁸⁹.

Furthermore, CSDDD requires companies to devise transition plans for climate change mitigation which aims to ensure, through best efforts, compatibility of the business model and of the strategy of the company with the transition to a sustainable economy and with the limiting of global warming to 1,5 °C in line with the Paris Agreement.

Finally, Article 31 provides that compliance with the national implementing law may be considered as an environmental or social aspect that contracting authorities may take into account as part of the *award criteria* for public and concession contracts in accordance with Directives 2014/23/EU, 2014/24/EU and 2014/25/EU, and as an environmental or social condition that contracting authorities may lay down in relation to the performance of public and concession contracts in accordance with those Directives.

This evolution aligns with the global standards of the International Sustainability Standards Board (ISSB) and the Global Reporting Initiative (GRI). The European Sustainability Reporting Standards (ESRS) adopted under the CSRD provide a comprehensive framework for reporting on a range of ESG issues.

⁸⁹ See article the proposal approved by the Council on 13 May 2024.

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Similarly, on the financial sector side, the Sustainable Finance Disclosure Regulation (SFDR) (EU) 2019/2088 enhances transparency in sustainable investments by necessitating disclosure of Environmental, Social & Governance (ESG) activities by Financial Market Participants (FMPs) and Financial Advisors (FAs). Categorizing investment funds based on their environmental and social objectives empowers investors to make informed decisions aligned with sustainability goals, thus safeguarding vulnerable communities from deceptive practices. Moreover, the EU Taxonomy serves as a framework for identifying environmentally sustainable economic activities, guiding companies, and financial institutions in making green investment decisions. By aligning investments with Taxonomy-aligned activities, both the environment and vulnerable communities stand to benefit, fostering a more inclusive and sustainable economy. The SFDR enhances transparency in sustainable investments, requiring EU and non-EU financial operators to disclose their integration of ESG factors. This regulation promotes accountability in investment decision-making and risk management, applying to operators offering services in the EU and all financial products sold within the region.

The SFDR identifies three typologies of financial products differentiating them based on their disclosure and sustainability quality levels: (a) products that do not show any sustainable focus (Article 6), (b) products promoting an environmental or social investment strategy (Article 8), (c) products with a sustainable investment objective (Article 9)⁹⁰. Article 2 no 17 defines “sustainable investment” as: «an investment in an economic activity that contributes to an environmental objective, as measured, for example, by key resource efficiency indicators on the use of energy, renewable energy, raw materials, water and land, on the production of waste, and greenhouse gas emissions, or on its impact on biodiversity and the circular economy, or an investment in an economic activity that contributes to a social objective, in particular an investment that contributes to tackling inequality or that fosters social cohesion, social integration and labour relations, or an investment in human capital or economically or socially disadvantaged communities, provided that such investments do not significantly harm any of those objectives and that the investee companies follow *good governance practices*, in particular with respect to sound management structures, employee relations, remuneration of staff and tax compliance» (emphasis added).

⁹⁰ O. Lysak, C. Houston, R. Juwadi, *EU SFDR--What's Happening in the Market?*, in 28(12) *Investment Lawyer* (2021), 17–20.

Scheitza and Busch⁹¹ found that of the 1,138 classified under Article 9 as of August 2022, by January 2023, 278 funds changed their status: 273 to Article 8 and 5 to Article 6. They categorize fund strategies into Basic ESG, Advanced ESG, Impact-aligned, and Impact-generating investments based on five criteria (objective, negative screening, positive screening, post-investment, and performance measurement). Scheitza and Busch found that: «Among Article 9 funds, the share of impact-generating investments is comparably low. While 72 % of all Article 9 funds state impact-generating objectives in product documents (e.g., enable the transition to a sustainable low carbon economy or contribute to sustainable practices), only 20 % of these funds can demonstrate how the investment strategy may have an attributable impact on environmental or social aspects».

According to Scheitza and Busch, the first two types of ESG-related investments: «consider sustainability aspects mainly from a financial materiality point of view. Basic ESG investments use exclusions and norms-based screening to mitigate risks, such as excluding fossil fuels or human rights violations. Performance measurement centers on financially material ESG risks. Advanced ESG investments emphasize ESG opportunities, apply stricter positive screenings, and employ post-investment strategies, e.g., engagement or voting activities».

The impact-related investments take instead into consideration a companies' positive impact on the environment and society.

Impact-aligned investments include companies with impacts that align with internationally accepted frameworks, such as the Sustainable Development Goals (SDGs) or the Paris Agreement. Indeed they «try to focus more directly on contributing to the SDGs or other environmental and social issues. They aim to identify impactful companies that, for example, derive revenues from products and services that reduce global emissions or improve resource efficiency. In terms of performance measurement, these funds capture the impact of investee companies, often using carbon metrics but also considering the proportion of female board members or waste production»⁹².

Impact-generating investments go one step further. They enable companies to directly address environmental or social challenges, using capital allocation or engagement and voting as mechanisms to encourage improvements in company impacts. According to Scheitza and Busch: «impact-generating strategies are mainly built on engagement activities (e.g., by steering

⁹¹ L. Scheitza, T. Busch, *Sfdr Article 9: Is It All About Impact?*, in 62 *Finance Research Letters* (2024), 105179.

⁹² *Ibidem*.

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entities toward positive impact, triggering positive change, or driving better integration of sustainability). Funds that aim to achieve impact through capital allocation are primarily involved in the microfinance sector. These funds provide direct financing for sustainable solutions, such as micro-enterprises and farms in developing countries⁹³.

In essence, Scheitza and Busch seem to advance the argument that true impact-generating sustainable investments are those which in line with article 2 no 17 SFDR represent «*an investment in human capital or economically or socially disadvantaged communities, provided that such investments do not significantly harm any of those objectives and that the investee companies follow good governance practices*». In other words, the filter between the so-called “dark green” and “light green” and therefore between more and less positively impactful investments should be the governance approach adopted and more specifically the consideration that “disadvantaged communities” receive as objectives, beneficiaries and perhaps potential partners of these investments.

Now, in discussing this hypothesis we cannot avoid completing the analysis of the EU policy on sustainable finance by bringing in the conversation the analysis of the EU Taxonomy, established in Regulation 2020/852. It is a key measure within the European Green Deal, steering investments towards projects and initiatives that positively contribute to sustainable development⁹⁴. However, while the regulation was immediately equipped with a green taxonomy, policymakers failed in providing a social taxonomy so far.

⁹³ *Ibidem*.

⁹⁴ In brief, the EU Taxonomy is a “green” classification system designed to translate environmental and climate transition objectives into specific criteria for economic activities and investments. It identifies six key environmental objectives: i) mitigation of climate change, ii) adaptation to climate change, iii) sustainable use of water and marine resources, iv) transition to a circular economy, v) prevention and control of pollution, vi) protection and restoration of biodiversity and ecosystems; M. Och, *Sustainable Finance and the EU Taxonomy Regulation – Hype or Hope?*, in 5 *Jan Ronse Institute for Company & Financial Law Working Paper* (2020); F. Schuetze, J. Stede, *EU Sustainable Finance Taxonomy – What Is Its Role on the Road towards Climate Neutrality?*, in 1923 *DIW Berlin Discussion Paper* (2020); A.M. Paccas, *Will the EU Taxonomy Regulation Foster a Sustainable Corporate Governance?*, in 611 *EGCI Law Working* (2021); A. Giacomelli, *EU Sustainability Taxonomy for non-financial undertakings: summary reporting criteria and extension to SMEs*, in 29 *Working Papers Department of Economics Ca’ Foscari University of Venice* (2021). Regulation 2023/2631/EU on European Green Bonds (EUGBs) aligns with the EU Taxonomy, aiming to channel bond proceeds into projects meeting environmental and sustainability criteria. The regulation sets stringent requirements for issuers, emphasizing external verification and contributing to the EU’s efforts to combat greenwashing.

Indeed, the European Commission technical expert group on sustainable finance presented the first draft of a social taxonomy in July 2021, and the second version was expected by the end of 2021. The report was finally released in February 2022 and was supposed to promote sustainable investment in Europe, putting the focus on the protection of human rights and on the social impact on the main stakeholder groups of businesses: workers, end-users/customers, and affected communities.

According to the report, inclusive and sustainable communities and societies is one of the possible objectives. As possible sub-objectives there is «promoting equality and inclusive growth, but also supporting sustainable livelihoods and land rights and ensuring the respect for the human rights of affected communities by carrying out risk based due diligence».

It is suggested to achieve the second sub-objective by among other things: «promoting community-driven development where decision-making processes are decentralised to the community level” and “carrying out meaningful consultations with affected communities, including on development priorities where relevant. [...] to ensure continuous engagement and good-faith negotiation with indigenous peoples to obtain their free, prior and informed consent before undertaking any activities that may affect them».

It also clarifies that: «Implementing the ‘free, prior and informed consent’ process when indigenous people’s groups are affected. Supporting freedom of assembly and expression including the protection of human-rights defenders and civic space by: wherever appropriate, taking action and engaging in collective advocacy, dialogue with states, and multi-stakeholder coalitions on issues relating to human-rights defenders and restrictions on civic freedoms and the rule of law; ensuring that indigenous and customary land rights are upheld when acquiring or using land, including by redesigning business plans or activities to avoid impacts on indigenous or customary land».

Unfortunately, the EU social taxonomy has been shelved indefinitely due to difficulties in agreeing on a conceptual framework and measurement system that would work at both the EU and global level.

This evolving regulatory framework on sustainable finance however not only emphasizes the commitment to sustainability, transparency and responsible corporate behavior but also confirms the recognition of the importance placed by EU policymaking on protecting and supporting vulnerable communities. By ensuring a harmonized and effective system to promote sustainable financial practices, the aim is to provide balanced resources and opportunities, especially for those who might be more exposed to the neg-

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ative impacts of environmental and social challenges. The commitment to ethical, inclusive, transparent, and sustainable innovation, aimed at promoting societal well-being, constitutes the cornerstone of the objectives of the new sustainable finance. These objectives include providing equal opportunities for participation to all within society, ensuring transparency, ethics, and a positive social and governance impact, as well as safeguarding the economic and environmental sustainability of every innovation.

3.2 On just transition and integrated local development: the partnership principle as the true source for engagement

EU hard and soft law on sustainable governance and sustainable finance seems to steer private actors towards sustainable business practices and investments. The current EU policy framework implies that the purest version – which means businesses and investors aim intentionally at generating real positive social and environmental impacts – can only be achieved only through a governance impact in the form of true engagement of all the stakeholders and more specifically vulnerable individuals and communities by establishing governance mechanisms based on the shared systemic stewardship of common economic, social and environmental assets or, better, resources.

Now, while policies nudging the private sector towards sustainability impacts make a good job at setting the different intensity of sustainability objectives straight, policies governing public investment for social and territorial cohesion are designed to assign an even stronger role to engagement of vulnerable communities and shared systemic stewardship as a measure to make the green and technological transitions more just and democratic.

One would expect that the European Green Deal (EGD), which has been put forward by the EU Commission as a growth and therefore as an innovation strategy, would deliver on this too. According to the 2019 Communication the EGD does require that the transition is “just and inclusive” so that “no one is left behind”: «It also aims to protect, conserve and enhance the EU’s natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. At the same time, this transition must be *just and inclusive*. It must put people first, and pay *attention to the regions, industries and workers who will face the greatest challenges*. Since it will bring substantial change, *active public participation and confidence* in the transition is paramount if policies are to work and be accepted. A new pact is needed to bring together *citizens in all their diversity*, with national, regional, local au-

thorities, *civil society* and *industry* working closely with the EU's institutions and consultative bodies»⁹⁵.

The Commission underlines that «the most vulnerable are the most exposed to the harmful effects of the environmental degradation» and it thus suggest integration of the just transition across the whole spectrum of EU actions and policies⁹⁶. The EGD is also considering the global and geopolitical consequences of an unjust transition⁹⁷.

But it is more concerned with the internal imbalances which can be created by the climate crisis. To this end, the EGD underlines «The need for a socially just transition must also be reflected in policies at EU and *national level*» and therefore it aims at building a solidarity between member states, different territories, as well as between generations. As established by the “Fit for 55” Communication «solidarity is a defining principle of the European Green Deal – between generations, Member States, regions, rural and urban areas, and different parts of society – as exemplified by the Just Transition Mechanism»⁹⁸. Indeed, the EGD devised the Just Transition Mechanism (JTM) to deal with the social and economic consequences of an imbalanced and unfair ecological transition within the EU. To this end the JTM is composed of: a) a Just Transition Fund (JTF) which awards grants to finance the implementation of Territorial Just Transition Plans (JTTP) which cover mainly three activities (land restoration, upskilling and reskilling programs, and investments in SMEs reconversion and the creation of start-up); b) a Just Transition Scheme (JTS) which can provide financial operators with an EU budget guarantee to partially cover the risk in financing and investing on operations in line with the just transition; c) a Public Sector Loan Facility (PSLF) for public law bodies and private operators entrusted with a public service mission to facilitate the financing of projects that do not generate sufficient streams of revenues to cover their investment costs⁹⁹.

The issue with the JTM is that it aims to provide support mainly to

⁹⁵ Communication from the Commission, *The European Green Deal*, Brussels 11.12.2019, COM (2019), 640 final, 2.

⁹⁶ The European Green Deal requires that «All EU actions and policies should pull together to help the EU achieve a successful and *just transition* towards a sustainable future».

⁹⁷ The European Green Deal anticipates that «The EU will work with all partners to increase climate and environmental resilience to prevent these challenges from becoming sources of conflict, food insecurity, population displacement and forced migration, and support a *just transition globally*».

⁹⁸ Communication from the Commission, *'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality*, Brussels, 14.7.2021, COM/2021/550 final.

⁹⁹ V. Karageorgou, *supra* note 24.

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workers and citizens in regions affected by the energy transition. The “most vulnerable” and “most exposed” people and territories are those that respectively based their personal economic livelihood and local industrial strategy on fossil fuels. Also, there is no formal link between the European Pillar of Social Rights (EPSR)¹⁰⁰ and the ecological transition devised by the European Green Deal (EGD). Nor does the EGD address the digital and technological transitions as part of the climate crisis either as a possible solution to it or as a further cause of vulnerability and inequality. The link between EPSR and the green and digital transitions, named also the twin transitions¹⁰¹ is instead pretty evident in the Commission Communication «A Strong Social Europe for Just Transitions» which calls for interventions to address the social implications of both the green and digital transitions by equipping people with different skills and tackling the distributional aspects of the transitions wherever they could manifest themselves and whomever they could affect¹⁰². Another instrument which seems to go in the direction of a more general solidarity is the Social Climate Fund which aims to provide financial support to low-income households and SMEs that are affected by the increase of transport prices and heating fuels as a consequence of the introduction of a road transport and buildings emissions trading system which is however a specific decarbonization measure¹⁰³.

In essence, none of these policies or instruments has reached the complexity and integration of the JTM, with a grants fund financing territorial plans, a guarantee scheme to mobilize private investors and a loan facility enabling public authorities to act as a driver for investment on social and economic infrastructure that are not self-sufficient. This positions the JTM as a potentially full-fledged investment program on both social welfare and industrial prosperity. So, the JTM must be considered the golden standard at the moment, but it has not been designed to become a general standard for both the ecological and digital transition and even within the ecological

¹⁰⁰ Commission Recommendation, *European Pillar of Social Rights*, COM (2017), 26.04.2017.

¹⁰¹ Communication from the Commission, *2022 Strategic Foresight Report Twinning the green and digital transitions in the new geopolitical context*, Brussels, 29.6.2022, COM(2022) 289 final.

¹⁰² Communication from the Commission, *A Strong Social Europe for Just Transitions*, COM(2020) 14 final, p. 5 and 11.

¹⁰³ Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund.

transition it does not have a general scope so that it can guarantee every vulnerable citizen, in every region or industrial sector affected by both¹⁰⁴.

Indeed, an interesting aspect of the JTM in general is that the typologies of eligible projects for the three instruments are pretty in line with the principle of sustainable innovation. Activities to be financed cover sustainable infrastructure, research, innovation, digitalization, reconversion of SMEs, creation of start-ups, land restoration, investment on social infrastructure and skills. There are however differences within the JTM, for instance the JTS and the PSLF seem to have a wider scope than the JTF in terms of the smart and sustainable infrastructure that can be financed¹⁰⁵.

Another crucial aspect and difference is related to the governance mechanisms which are in line with what should be considered the golden standard in terms of shared systemic stewardship-based governance mechanisms for just sustainable innovation.

Indeed, given its nature of a structural fund established under article 175, paragraph 1, TFUE as recalled from the Preamble of the JTF Regulation, its article 11, paragraph 3, refers to article 8 of EU Regulation 2021/1060 which provides common provisions for all the so-called structural funds (CPR). The fact that the JTM governance approach is that typical of a structural fund is also exemplified by the template of Territorial Just Transition Plans to be submitted by Member States which is provided by Annex II of the JTF regulation. It requires the description of three main aspects for the plans to be eligible: a) the partnerships approach adopted by the territorial plans; b) the impact monitoring and measuring mechanisms; c) the bodies responsible for the implementation and monitoring of the plans.

These three elements (*i.e.* multi-stakeholder partnerships, impact measurement, and enabling institutions) compose the three key ingredients for an effective just transition plan. Now, the reference to the partnership principle enshrined in the CPR should lead to think that a) according to the JTM true just transition can take place only by mainstreaming the ecological and technological justice and this can be done only by injecting it into the cohesion policies which address social and economic divides together with the consideration of vulnerability of territories and communities (according to recital 1 of the CPR «the Union is to aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, and that particular attention is to be paid to rural areas, areas affected by industrial transition, and regions which suffer

¹⁰⁴ V. Karageorgou, *supra* note 24.

¹⁰⁵ *Ibidem*.

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from severe and permanent natural or demographic handicaps»); b) the partnership principle has to be interpreted as implying a multiple stakeholders stewardship of common resources (according to recital 15 the partnership principle is «a key feature in the implementation of the Funds, building on the multi-level governance approach and ensuring the involvement of regional, local, urban and other public authorities, civil society, economic and social partners and, where appropriate, research organisations and universities»).

First, the EU commitment to deliver social justice through the EU Cohesion Policy is «In order to promote its overall harmonious development, the Union shall develop and pursue its actions leading to the strengthening of its economic, social and territorial cohesion» (article 174 TFEU). The Cohesion Policy plays a pivotal role in overcoming economic, social, and territorial divides within the Union. By addressing regional divides and supporting vulnerable regions struggling with social and environmental challenges (not just those generated by the energy transition and the fossil fuel economy), cohesion policy can contribute significantly to the climate and technological justice. This policy framework is specifically designed to address the needs of regions facing economic, social, and environmental adversities, thereby fostering inclusive and equitable development across the EU¹⁰⁶.

The mainstreaming of a just sustainable innovation is enshrined in article 5 of the CPR which establishes the policy objectives of the Cohesion Policy:

«(a) a more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity;

(b) a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe by promoting clean and fair energy transition, green and blue investment, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility;

(c) a more connected Europe by enhancing mobility;

(d) a more social and inclusive Europe implementing the European Pillar of Social Rights;

(e) a Europe closer to citizens by fostering the sustainable and integrated development of all types of territories and local initiatives».

¹⁰⁶ See N.F. Dotti, I. Musiałkowska, S. De Gregorio Hurtado, & J. Walczyk (eds.), *EU Cohesion Policy*, Edward Elgar Publishing, 2024, and in particular J. Bachtler, S. Bourdin, M. Ferry, *Cohesion policy in post-pandemic Europe*, 292-310 and S. Pazos-Vidal, *A legal perspective on the origins and evolution of the EU Cohesion Policy*, 47-64.

Second, the discussion around vulnerable communities' engagement and their participation to the shared shared systemic stewardship of the «common economic, social and environmental assets» as a defining feature of a just sustainable innovation is the bedrock of EU policymaking, guiding the Union's endeavors towards a more just ecological, energy, and technological transition. By enabling a shared commitment to interpret and implement these long-term value maximations strategy, the EU policy framework is aimed at confronting environmental and technological challenges, mitigating the impacts of the ecological and technological transitions, and ensuring equitable access to the necessary innovative solutions and technological advancements for all member states and their citizens¹⁰⁷. By embracing a comprehensive multi-stakeholder approach that integrates environmental, social, and economic considerations, the EU can continue to lead in addressing global challenges and at the same time foster inclusive and sustainable development for present and future generations.

The EU's cohesion policy is devised to play a crucial role in reducing disparities among regions by investing in disadvantaged areas, promoting social inclusion, and alleviating poverty. By addressing social, environmental and economic vulnerabilities through an integrated development in these areas, the cohesion policy contributes significantly to creating a more sustainable and equitable society.

Thus, Articles 8 establishing the «Partnership and multi-level governance» principle, Article 9 recognizing the relevance of the «Horizontal Principles», and the chapter dedicated to «Integrated Territorial Development» (Articles 28) and more specifically article 31 on «Community led local development»¹⁰⁸ of the Common Provisions Regulation (CPR)¹⁰⁹ synthesize the dimensions of a just sustainable innovation both through a substantive and procedural justice perspective.

They strive to include and protect vulnerable communities primarily

¹⁰⁷ C. Iaione, E. De Nictolis, A. Berti Suman, *The Internet of Humans (IoH): Human rights and co-governance to achieve tech justice in the city*, *supra* note 16, 263-299.

¹⁰⁸ In paragraph 2, letter b, «be led by local action groups composed of representatives of public and private socio-economic interests, in which no single interest group controls the decision-making process».

¹⁰⁹ Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021 laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, the Just Transition Fund, the European Maritime and Fisheries Fund and the Fund for Aquaculture and financial rules for those funds and for the Asylum, Migration and Integration Fund, the Internal Security Fund and the Instrument for financial support for border management and visa policy

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through the partnerships principle in the preparation, implementation, and evaluation of the national plans, as clarified by Article 8. It stipulates that each member state shall organize and implement the design and use of the funds through comprehensive and multistakeholder partnerships, considering its institutional and legal framework, involving various actors such as public authorities at various levels («regional, local, urban and other public authorities»), economic and social stakeholders, civil society organizations («relevant bodies representing civil society, such as environmental partners, non-governmental organisations, and bodies responsible for promoting social inclusion, fundamental rights, rights of persons with disabilities, gender equality and non-discrimination»), and academic institutions. This partnership adheres to the principle of multi-level governance and involves partners in all stages of the programs. Member states may allocate a percentage of resources to partners for the development of administrative capacities¹¹⁰.

In articles 28 and following, the partnership principle is further operationalized into a set of specific integrated territorial development tools, such as integrated territorial investments, community-led local development, that enable the local shared systemic stewardship of the eligible projects and therefore of the common and essential resources on which communities' interests and livelihood depend. They should be based on territorial and local development strategies to become a meaningful vehicle facilitating the use of EU funds in promoting and implementing concrete solutions and operations addressing the development challenges of disadvantaged regions and areas¹¹¹.

Within the same framework, it is worth noting also the New European Bauhaus territorial development model (NEB TDM) financial instrument¹¹² – that will be deeper explored in the next paragraph – holds considerable importance as it aims to ensure professional and financial support for sustainable investments for individuals, communities, and businesses. The New European Bauhaus (NEB) initiative seeks to redefine living spaces in a manner that harmonizes with the planet's needs while fostering inclusivity and aesthetic quality. At the heart of the NEB initiative lies the Territorial Development Model (TDM), which emphasizes a holistic approach to ur-

¹¹⁰ S. Pazos-Vidal, *A legal perspective on the origins and evolution of the EU Cohesion Policy*, in *EU Cohesion Policy*, *supra* note 106.

¹¹¹ *Id.*, 256-274.

¹¹² See the New European Bauhaus territorial development model (NEB TDM) financial instrument, available at the website: https://ec.europa.eu/regional_policy/en/information/publications/communications/2022/new-european-bauhaus-territorial-development-model-neb-tdm-financial-instrument.

ban development. It integrates innovative, sustainable, and inclusive design principles into urban policies and projects, aiming to create spaces that are environmentally friendly, socially inclusive, and aesthetically pleasing. As already mentioned, the NEB TDM introduces a model financial instrument (FI) to support NEB projects in Member States. This FI aims to provide managing authorities with the necessary building blocks to implement financial support mechanisms that foster innovation, energy efficiency and social integration. Unlike traditional approaches, the NEB TDM places a strong emphasis on being people-centered, participatory, and aligned with ambitious climate objectives. By incorporating a grant component, the FI ensures that even the most ambitious sustainability goals are within reach, particularly for vulnerable communities¹¹³.

Lastly, within the different but connected framework of the research and innovation agenda for cities, the role of communities in the governance of the technological and ecological transition is also central in the Horizon Europe Cities Mission delivery mechanism, the so-called city contract. In essence the city contract must be considered a community-based investment plan and partnership for the ecological and digital transitions of the city¹¹⁴. For example, the city of Rome centered its strategy on the creation of energy communities¹¹⁵.

4. Conclusions: the role of USDIPs and Csos in building sustainable local innovation ecosystem for vulnerable communities

If engagement and stewardship are the source code of truly impactful governance for both private and public investment on sustainable innovation, then this is the only way sustainable innovation can be just. However, the question of how to enable engagement and stewardship remains unanswered and there are limits to this hypothesis which derive from the lack of human and economic resources devoted to the implementation of this governance approach, as well as the lack of codified and universally accepted legal and organizational models which can implement this approach.

¹¹³ A.K. Andrzejewska, *Determining Urban Indicators in Local Plans—As One of the Sustainable Assumptions of the New European Bauhaus?*, in 14(1) *Buildings* (2023), 100.

¹¹⁴ On the Cities Mission information available at <https://netzerocities.eu/mis-sion-cities/>. See also M. Bernardi, A. Aquili, *Beyond “Climate-Neutral and Smart Cities”*: *Reflections on Strategies and Governance Models*, in 6(4) *Fuori Luogo* (2023), 19–37.

¹¹⁵ On the Rome Climate City Contract see https://www.comune.roma.it/web-resources/cms/documents/AdaptationStrategy_ENG.pdf

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A concrete instrument that has proved its viability as a tool capable of including the vulnerable communities into sustainable innovation processes at the local level are the Urban Sustainable Development and Innovation Partnerships (USDIPs)¹¹⁶. USDIPs is an innovative partnership tool in the realization of innovations oriented towards sustainable development (so-called “mission-oriented” innovations). USDIPs represent an innovative approach to fostering collaboration among diverse urban stakeholders and aspire to become delivery mechanisms of SDG11¹¹⁷. These partnerships transcend traditional public-private partnerships, aiming to unite stakeholders around projects promoting just and sustainable innovation at the city level. USDIPs represent a legal category that can shape and formalize this new governance and legal arrangements pushing for a more equitable cooperation between local communities, public authorities, civil society, local businesses, and knowledge institutions¹¹⁸. Several EU cities through the UIA initiative (currently the EUI Innovative Actions) have offered an idea of how USDIPs operate and what results they can bring for communities:

- i) Barcelona (Spain) – B-MINCOME: Implements a guaranteed minimum income (GMI) combined with active social policies to empower vulnerable families and reduce urban poverty. The project emphasizes community engagement and experimental approaches to develop more efficient welfare services.
- ii) Birmingham (United Kingdom) – USE-IT!: Focuses on integrating migrants into the workforce through social enterprises, providing training and job opportunities within the healthcare sector. Strong cooperation between local government, health services, and community organizations drives the project’s success.
- iii) Lille (France) – TAST’in FIVES: Aims to counteract poverty in a low-income neighborhood by creating a collective kitchen as a space for training, job opportunities, and socialization around shared meals.

¹¹⁶ On USDIPs, see C. Iaione, *Urban sustainable development and innovation partnerships*, in 2 *Italian Journal of Public Law* (2022), 605.

¹¹⁷ K.H. Eller, *SDG 11: Sustainable Cities and Communities*, in R. Michaels, V. Ruiz Abou-Nigm, & H. van Loon (eds.), *The private side of transforming our world: UN Sustainable Development Goals 2030 and the role of private international law*, 2021, 353–381; D. Wuebben, J. Romero-Luis, M. Gertrudix, *Citizen science and citizen energy communities: a systematic review and potential alliances for SDGs*, in 12(23) *Sustainability* (2020), 10096; Y. Ozaki, R. Shaw, *Citizens’ Social Participation to Implement Sustainable Development Goals (SDGs): A Literature Review*, in 14(21) *Sustainability* (2022), 14471; E. Bilsky, A. Calvete Moreno, A. Fernández Tortosa, *Local Governments and SDG Localisation: Reshaping Multilevel Governance from the Bottom up*, in 22(4) *Journal of Human Development and Capabilities* (2021), 713–724.

¹¹⁸ S. Foster, C. Iaione, *The City as a Commons*, in *Yale Law & Policy Review*, 2016, 34, 281.

Challenges include reaching socially excluded populations and designing effective governance models.

- iv) Nantes (France) – 5Bridges: Utilizes urban design strategies to address homelessness, promoting high-quality housing and social integration. The project emphasizes collaboration between different social groups and the active involvement of refugees and local communities.
- v) Gothenburg (Sweden) – FED: Focuses on reducing carbon consumption through district-level energy systems and fostering collaboration between public and private stakeholders. The project aims to create sustainable markets and improve energy efficiency while benefiting vulnerable communities.
- vi) Maribor (Slovenia) – URBAN SOIL 4 FOOD: Implements a circular economy model to transform municipal waste into urban soil for community gardens, promoting local food production and reducing environmental footprint. The project emphasizes collaboration between public and private sectors to optimize resource use and enhance sustainability.
- vii) Vienna (Austria) – CoRE: Establishes a physical and digital platform for cross-sector cooperation and peer mentoring to integrate asylum seekers. The project emphasizes empowerment and collaboration between refugees, public institutions, NGOs, and civil society initiatives.
- viii) Athens (Greece) – Curing the Limbo: Develops affordable housing solutions and collaborative arrangements to improve the employability of refugees. Through a circular housing exchange system and community-led activities, the project aims to facilitate social integration and mutual benefit between refugees and local communities. vulnerable communities play a crucial role in the sustainable innovation transition¹¹⁹.

USDIPs are also used by global and European development and financial institutions like the European Investment Bank (EIB). Two inspiring examples through which the EIB has facilitated the leading role that urban communities can take in the sustainable finance and sustainable governance of the ecological and technological transition are emerging from the “Multi-Region Assistance Project – Revolving Investment for Cities in Europe” (MRA-RICE) which has provided advisory services to the cities of London, Manchester, Milan and The Hague¹²⁰, and the case study of the

¹¹⁹ On USDIPs see C. Iaione, *Urban sustainable development and innovation partnerships*, *supra* note 116, 605.

¹²⁰ See the report available at www.fi-compass.eu/sites/default/files/publications/

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Financial Instruments for Urban Development in Portugal (IFRRU 2020, Instrumento Financeiro para a Reabilitação e Revitalização Urbanas), a financial instrument that has been established to support urban renewal across the entire Portuguese territory. Also, the EIB has taken initiatives to promote the use of social outcome contracting (SOC) options for urban vulnerable communities projects, an innovative form of procuring services based on outcomes, whose main feature is that improved social and health outcomes lead to a financial return for the involved parties and the saving of public finances¹²¹.

These case studies demonstrate the diverse ways in which vulnerable communities are engaged in innovative projects aimed at addressing urban challenges. By prioritizing inclusivity, experimentation, and engagement, stakeholders can harness the collective wisdom and creativity of vulnerable communities to co-create solutions that meet their specific needs.

However, coding the legal and policy tools that can become delivery mechanisms for impact-based just sustainable innovation is not enough. Ultimately, the just sustainable innovation transition, which is essential for building more just, resilient, and sustainable societies for all requires ensuring that vulnerable communities are active participants and partners in these transitions. To ensure communities become true partners and co-owners of these sustainable processes, capacity building processes, physical infrastructure, and institutional infrastructure are essential:

- i) capacity building processes involve enhancing the skills and resources of local communities, enabling active participation in planning, management, and implementation of sustainable development initiatives;
- ii) physical infrastructure includes constructing research and innovation brokerage centers like the House of Emerging Technologies in Rome, but also community centers, co-working spaces, science parks, living labs and incubators in vulnerable neighborhood or areas that facilitate

MRA-RICE%20indepth%20case%20study%20The%20Hague.pdf according to which «The main objective of the project was to identify common technical and financing needs across cities, and the extent to which a multi-region financial instrument that provides standardised solutions and delivery models could be a viable solution to provide financing and technical support to cities' urban development projects. As part of the MRA-RICE project, The Hague has been the lead partner in developing a blueprint for future financial instruments for cities. Following delivery of the Phase 2 Report for the project, The Hague has been considering the application of the MRA RICE Blueprint to its Energy Transition».

¹²¹ See the Civic eState URBACT project final report available at www.civicestate.eu/wp-content/uploads/2021/11/Final-product-CIVIC-eSTATE-new-models-of-urban-co-governance-based-on-the-commons-1.pdf

collaboration and resource sharing among local innovation ecosystem community members;

- iii) institutional infrastructure entails establishing local governance bodies and promoting partnerships between public entities, civil society organizations, businesses, and other stakeholders. These new physical spaces and institutions are required to facilitate the creation and smooth management of local ecosystems for sustainable innovation, supporting fair and sustainable development while addressing environmental and societal challenges.

In this framework, the City Sciences Offices (Csos) can play a pivotal role as capacity building managers for vulnerable communities, as well as physical and institutional infrastructure steering the engagement and partnerships with vulnerable communities¹²². With their role in facilitating collaboration and catalyzing resources and knowledge, the Cso is instrumental in engaging communities in data collection, issue identification, and co-creation of solutions. This active participation fosters greater awareness, understanding, and action on sustainability and environmental justice at the local level¹²³.

Operating as a nexus between urban needs, environmental challenges, and innovative solutions, the Cso plays a pivotal role in combating climate change. By fostering collaboration and knowledge exchange among cities,

¹²² See E. De Nictolis, C. Iaione, *The science of urban regions: Public-science-community partnerships as a new mode of regional governance?*, in 24(2) *Theoretical Inquiries in Law* (2023), 141–162.

¹²³ B.J. Strasser, J. Baudry, D. Mahr, G. Sanchez, E. Tancoigne, *Citizen science? Rethinking science and public participation*, in 32 *Sci. Technol. Stud.* (2019), 52–76; H. Sauermann, K. Vohland, V. Antoniou, B. Balázs, C. Göbel, K. Karatzas, P. Mooney, J. Perelló, M. Ponti, R. Samson, *Citizen science and sustainability transitions*, in 49 *Res. Policy* (2020), 103978; B.B. Arnold, *Environmental Surveillance, Citizen Science and Smart Grids*, in M. Rimmer (ed), *Intellectual Property and Clean Energy: The Paris Agreement and Climate Justice*, Springer, 2018, 375–398; J. Chilvers, H. Pallett, T. Hargreaves, *Ecologies of participation in socio-technical change: The case of energy system transitions*, in 42 *Energy Res. Soc. Sci.* (2018), 199–210; J. Hicks, N. Ison, *An exploration of the boundaries of ‘community’ in community renewable energy projects: Navigating between motivations and context*, in 113 *Energy Policy* (2018), 523–534; L. Josephsen, *Approaches to the Implementation of the Sustainable Development Goals—Some Considerations on the Theoretical Underpinnings of the 2030 Agenda*, in 60 *Economics Discussion Papers* (2017), Kiel Institute for the World Economy (IfW), Kiel, Germany; P. Muñoz, F. Janssen, K. Nicolopoulou, K. Hockerts, *Advancing sustainable entrepreneurship through substantive research*, in 24(2) *International Journal of Entrepreneurial Behavior & Research* (2018), 322–332; T. Henfrey, J. Kenrick, *Climate, Commons and Hope: the Transition movement in global perspective*, in T. Henfrey, G. Maschkowski & G. Penha-Lopes (eds.), *Resilience, Community Action and Societal Transformation*, available at www.transition-researchnetwork.org/uploads/1/2/7/3/12737251/3.2_transition_and_resilience.pdf

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academic institutions, the private sector, and civil society organizations, it orchestrates resources and expertise to effectively address climate challenges. Moreover, the CSO actively promotes innovation and sustainable development within cities by collaborating with local stakeholders to implement solutions that reduce greenhouse gas emissions, enhance energy efficiency, encourage sustainable mobility, and safeguard natural resources.

Another integral aspect of the CSO's role is its dedication to fostering public participation and local action. Through awareness programs, education initiatives, and community engagement efforts, the CSO raises awareness about climate issues and encourages concrete actions at both individual and collective levels. This drives the adoption of sustainable practices in daily life and urban planning¹²⁴.

One of the CSOs working on sustainable innovation was established in 2019 in Italy under the auspices of the City Science Initiative hosted by the Joint Research Centre (JRC) of the European Commission with the aim of strengthening the contribution of science and research in addressing urban challenges, reducing or bridging the gap between science and policy. Located in Reggio Emilia, at the *Chiostri di San Pietro*, and modeled on the pioneering experience of Amsterdam, this collaborative laboratory involves the city, the university, the administration, and associations in the search for experimental sustainable innovation solutions that can then be integrated into public policies.

In Amsterdam, Hamburg, Tessaioniki and Reggio Emilia, the City Science Office plays a fundamental role in enhancing the capacities of urban communities¹²⁵. This means actively engaging in promoting the develop-

¹²⁴ On this see: City Science for Urban Challenges, 2020, available at <https://open-research.amsterdam/nl/page/63027/2020-city-science-for-urban-challenges>, and Urban Regional Research Ecology, 2022, available at <https://openresearch.amsterdam/en/page/85094/full-publication-urban-regional-research-ecology> on the importance, opportunities and challenges to formal collaboration between local and regional authorities and knowledge institutions in 2022 and beyond. Building on the studies carried out regarding the role of cities in shaping the collaboration with knowledge institutions and other stakeholders – as other branch on of government and citizens – to develop research that can enable the enactment of better equipped policies, now the focus should be shifted on universities in order to see in which ways these fundamental cultural actors can play a pivotal role in the design of the future of cities and regions.

¹²⁵ See C. Nevejan (ed.), *City Science for Urban Challenges Pilot assessment and future potential of the City Science Initiative 2019–2020*, 2020, available at <https://openresearch.amsterdam/nl/page/63027/2020-city-science-for-urban-challenges>; C. Nevejan, C. Iaione P. Bamidis, T. Jacob, A. Hollstein, J. Lardic, *Urban Regional Research Ecology: on the local interaction between science and government, research and execution, theory and practice in times of accelerating*

ment of skills and resources within cities to tackle complex challenges such as climate change, environmental and social sustainability, and other critical urban issues. To achieve this, the City Science Office implements strategies and training programs designed to enhance the capabilities of community members, public officials, local entrepreneurs, and other stakeholders. These programs may include workshops, training courses, awareness sessions, and other initiatives aimed at providing practical knowledge, technical skills, and tools necessary to address urban challenges effectively and sustainably. Additionally, the City Science Office facilitates the exchange of knowledge and best practices among cities, creating networks of collaboration and partnerships that allow communities to learn from each other and adapt previously tested solutions to the local context. This capacity-building process contributes to creating more resilient communities capable of adapting to changes and thriving in an increasingly complex and dynamic urban environment¹²⁶.

In conclusion, fostering sustainable local innovation ecosystems¹²⁷ is vital for promoting enduring development in vulnerable communities. These ecosystems, characterized by tailored solutions and collaborative networks, empower communities to effectively address challenges, enhancing their resilience and well-being. To ensure communities become true partners in sustainable processes, capacity building, physical infrastructure, and institutional development are essential components.

The role of Csos is paramount in this endeavor. By facilitating collaboration and knowledge exchange, Csos play a pivotal role in engaging communities, addressing climate challenges, and promoting innovation and sustainable development within cities. Through awareness programs and community engagement efforts, Csos foster public participation and local action, driving the adoption of sustainable practices¹²⁸.

Establishing Csos, such as the ones in Amsterdam, Hamburg, Tessa-loniki, Reggio Emilia, represents a significant step towards enhancing the capacities of urban communities. By implementing strategies and training programs, Csos empower community members, public officials, and local

and accumulating global crises, 2022, available at <https://openresearch.amsterdam/en/overview/85091>.

¹²⁶ See C. Nevejan, C. Iaione, P. Bamidis, J. Goilo, D. Mantziari, F. Wupperfeld, M. Gardiner (eds.), *Social Impact for Climate Justice, exploration of City Science and the new ESG/CSRD frameworks for evidence-based investments and local policymaking*, 2024, available at <https://openresearch.amsterdam/en/page/107704/social-impact-for-climate-justice>.

¹²⁷ On sustainable local innovation ecosystems N. Sultana, E. Turkina, *Collaboration for Sustainable Innovation Ecosystem: The Role of Intermediaries*, in 15(10) *Sustainability* (2023), 7754.

¹²⁸ E. De Nictolis, C. Iaione, *The Science of Urban Regions*, *supra* note 16.

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entrepreneurs to effectively address urban challenges. Furthermore, Csos facilitate the exchange of knowledge and best practices among cities, contributing to the creation of more resilient communities capable of thriving in an increasingly complex urban environment.

In essence, the role of Csos extends beyond mere coordination; they serve as catalysts for sustainable development, promoting collaboration, innovation, and community engagement. As we continue to confront the challenges of climate change and urban sustainability, Csos stand as vital allies in building resilient and sustainable communities for the future.

Finally, USDIPs and Csos can become the pillars of those sustainable innovation ecosystems the Horizon Europe regulation talks about in Annex II for Pillar III as one of the key missions of the European Institute of Innovation and Technology (EIT). Fostering local sustainable innovation ecosystems is essential for promoting enduring development in vulnerable communities.

These ecosystems entail establishing institutions, processes, economic and legal infrastructure to cultivate local capacities and generate tailored innovative solutions, facilitating access to education, technology, and finance, and encouraging collaboration and networking¹²⁹. This empowerment enables communities to effectively address challenges, enhancing resilience and well-being. Adaptability to evolving needs and resources is crucial for their sustainability, ensuring continual benefit to vulnerable communities. The concept of «local sustainable innovation ecosystems» has gained recognition, embodying conducive environments within specific regions where innovation flourishes sustainably. This involves nurturing diverse stakeholder networks to drive innovation, effectively leveraging local capabilities and resources through partnerships and collaborations, while prioritizing environmental, economic, and social sustainability. Supporting entrepreneurship is vital, providing resources such as funding, mentorship, and networking to transform innovative ideas into sustainable businesses, fostering economic growth and resilience. These ecosystems are dynamic and adaptable, requiring continual investment to maintain momentum and drive ongoing innovation.

In essence, local sustainable innovation ecosystems represent a holistic approach to fostering innovation while promoting sustainability across economic, social, health and environmental dimensions, generating long-term

¹²⁹ It goes in this direction the Reggio Emilia Regulation on Urban and Climate Justice and Democracy, *supra* note 16.

positive impacts within communities by respecting local conditions and harnessing local strengths and collaboration.

Further research shall investigate if and how the principle of just sustainable innovation can be a way to implement the Planetary Health approach for local sustainable innovation ecosystems. Indeed, the KNAW report on Planetary Health identifies the governance and the urban dimensions as two of the main knowledge gaps and therefore areas that should be considered as a research priority¹³⁰.

In addition this study leaves open the question on the preparedness of knowledge institutions, in particular university and other academic institutions, to embark in projects and operations that require abandoning “ivory towerism” as well as “scholactivism” to embrace a new fourth mission or purpose¹³¹, that of enabling the creation of just technological and

¹³⁰ The term Planetary Health was introduced through an initiative launched by *The Lancet* and the Rockefeller Foundation in the 2010s. See R. Horton et al., *From public to Planetary health: a manifesto*, in 383 (9920) *The Lancet* (2014), 847; S. Whitmee, et al., *Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation– Lancet Commission on Planetary health*, in 386(10007) *The Lancet* (2015), 1973–2028. Two textbooks have been published S.S. Myers, H. Frumkin (eds.), *Planetary health. Protecting nature to protect ourselves*, Island Press, 2020; A. Haines, H. Frumkin, *Planetary Health: Safeguarding Human Health and the Environment in the Anthropocene*, Cambridge University Press, 2021; KNAW, *Planetary Health. An emerging field to be developed*, Amsterdam, 2023, available at www.knaw.nl/en/publications/planetary-health-emerging-field-be-developed. More recently a decolonizing view of the concept has gained ground, see N. Redvers, Y. Celidwen, C. Schultz, O. Horn, C. Githaiga, M. Vera, M. Perdrisat, L. Mad Plume, D. Kobei, M.C. Kain, A. Poelina, J.N. Rojas, B. Blondin, *The determinants of planetary health: An Indigenous consensus perspective*, in 6v *The Lancet Planetary Health* (2022), e156–e163

¹³¹ D. Bok, *Beyond the ivory tower: Social responsibilities of the modern university*, Harvard University Press, 1982; C. Iaione, P. Cannavò, *The collaborative and polycentric governance of the urban and local commons*, in 5 *Urban Pamphleteer* (2015), 29–31; A. Alemanno, “Knowledge comes with responsibility”: *Why academic ivory towerism can’t be the answer to legal scholactivism*, in 20(2) *International Journal of Constitutional Law* (2022), 560–561. In its communication on achieving the European Education Area by 2025, the European Commission emphasized the central role of higher education institutions to go beyond the knowledge triangle (education, research, innovation) and foster the so-called “knowledge square” (education, research, innovation and service to society). Universities are expected to make the transfer of research and innovation to society, and the orientation of teaching toward exchange with society and engagement with societal challenges essential elements of their mission connecting all missions of universities with each other. To this end the Commission has stimulated the creation of higher education institutions alliances to establish a systemic, structural and sustainable cooperation, test diverse innovative models and formats of cooperation, in order to break the silos between the four building blocks of the knowledge square and maximize its impacts with and for the society. University alliances were funded through the Erasmus+ which remains pri-

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ecological transitions projects and operations that can be governed through a shared systemic stewardship between all the stakeholders involved and in particular the vulnerable groups and communities and financed by long-term investors interested not just in the maximization of the financial materiality, but also the long-term value of common economic social and environmental resources on which the prosperity of people, the Planet and thus the economic and financial systems depend¹³².

Abstract

The EU law and policy framework introduced in its main R&I program, Horizon Europe, the principle of “sustainable innovation” as a principle that should guide public investment on innovation. This principle calls for the recognition of the undisputable role that innovation can play in solving daunting social and environmental challenges generated by the technological transition and the climate crisis. It is less clear whether this principle can also engrain social justice to make the technological and ecological transitions more just. This article investigates first whether the legal debate on climate and energy justice as EU constitutional clauses can help operationalize the justice dimension of sustainable innovation. The investigation turns then to the role of the EU secondary law and legal reforms on sustainable corporate governance and sustainable finance steering private economic and financial operators towards the production of positive environmental and social impacts which seem to call for active engagement with all the stakeholders, including vulnerable communities, and a shared systemic stewardship of common essential resources. It then turns to the analysis of the legislation on public investment on the just transition and the social and territorial cohesion to demonstrate that probably only public investment through the “partnership principle” can enable real positive engagement of vulnerable communities and therefore a shared systemic stewardship of common essential resources to deliver a just and democratic ecological and technological transition. The article ends identifying limitations to this hypothesis which are mainly related to the lack of human and economic resources, and it shed light on a possible trajectory for future research pathways to overcome these limitations by making better use of new multistakeholder partnerships models aimed at tackling sustainable development

marily an education program of the EU. The R&I dimension of the alliances has been supported through a specific Horizon Europe SwafS – Science with and for Society. See also the Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) (2021/C 66/01).

¹³² See. C. Mayer, *Prosperity: Better business makes the greater good*, supra note 8; G. Serafeim, *Purpose and profit: how business can lift up the world*, HarperCollins Leadership, 2022.

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and innovation as well as partially rethinking the role and mission of knowledge institutions in local innovation ecosystems as pivotal agents of local institutions such as city science offices that can enable and govern the cooperation between the various stakeholders within these ecosystems and monitor the production of their positive social and environmental impacts.