Realities of the Twin-Transition: EU Research Funding, Artificial Intelligence, and Techno-Optimism

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1 Introduction

"Twinning" the transitions towards a green and digital economy is increasingly brought forward as a guiding principle in political discourses around future-proofing the production-consumption systems in Europe. This narrative connects the necessity of reducing the global and local ecological devastation created by economic activity in Europe with the technological potential of digitalisation. Drawing on agenda setting communication of the European Commission and declared national-government strategies on investments in information and communications technology, this essay aims to demonstrate how those institutions produce a transition narrative that obscures clear pathways of action and reproduces existing economic structures with their ecological and social contradictions.

By depicting digitalisation as one of the key factors for reducing energy and resource overconsumption, policy debates are stirred towards efficiency increases through technological improvements and away from questions of systemic change. This argument is solidified by analysing how the EUC presents the digital and green transition as well as their realities. Secondly, it is argued that this interpretation of the sustainability transition downplays the ecological problems of an increased use of digital technologies and shifts their solution into an ideal future of low-energy computation and circular economies of electronic products. Combining those two perspectives shows in how far the current agenda setting of "twinning" green and digital transitions in Europe are motivated by a techno-optimistic framework whose contradictions are already apparent but are chosen to be ignored.

In the exploration of the discourse surrounding the Twin-Transition within the European Union, several fundamental questions emerge. What precisely constitutes a discourse, and how does it manifest within the context of the Twin-Transition? Moreover, what are the underlying principles of the Twin-Transition itself, and how do the green and digital transitions factor into this intricate concept? Are they genuinely "Twins" in their nature, and what motivates the intentional pairing of these transitions? These inquiries provide a foundational framework for delving into the discourse that surrounds the Twin-Transition and, subsequently, for fostering a deeper understanding that extends beyond the conventional narratives.

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Narrative based research on environmental and ecological issues focuses on the linguistic analysis of official documents and other communication pieces to extract how involved parties and actors think even unconsciously about the topic at hand and what kind of belief systems or political and material forces guide the discourse in a specific direction (Paschen and Ison (2014), Fløttum and Gjerstad (2017)). Similar to the analysis of climate adaption in the EU by Remling (2018), this study employs the Logics Approach to Poststructuralist Discourse Theory (PDT) to go beyond the retrospective approach of analysis by understanding the discourses around the twin transition as productive (Griggs and Howarth (2016)).

The twin transition is not merely a product of an underlying system of interests and internal and external pressures, but the discourse produces the pressures itself, stirring policy into a direction. This production appears through discursive practices that link together elements which are not intrinsically related. The relation is produced. The locus of politics is not a particular side but between all involved parties, entities, and interests. Therefore, the emergent discourse is a social construct, and the outcome is inherently political (Laclau and Mouffe (2014)). The EU Commission here is one of the key players in producing a productive discourse around climate change mitigation and adaption.

2   The "Twin-Transition"

In this critical exploration, two pivotal questions emerge as central pillars of inquiry: Firstly, what is the precise discourse that the EU Commission endeavors to shape and propagate? This question delves into the heart of the Commission's strategic communication and its underlying narrative architecture. Unpacking this discourse is fundamental to understanding how the Commission influences policy debates and shapes the perception of green and digital transitions.

Secondly, an equally pressing question pertains to the actual realities of the discourse. By scrutinizing the real-world outcomes and implications of the Commission's articulated discourse, we aim to bridge the divide between rhetoric and action. This inquiry into the realities that underpin the discourse ultimately provides a comprehensive view of the impact of the EU Commission's communication strategies on the broader socio-political landscape.

The "twin-transition" framing is an important part of the vision of the current Von-der-Leyen-Administration since she got installed as the President of the European Commission in 2019 (EC (2018a)). The concept is included in most relevant EUC-strategy setting documents of the last 4 years. Its most pronounced expression is found in the communication "Europe's moment: Repair and Prepare for the Next Generation" that mentioned the concept 6 times, outlining the Recovery and Resilience Facility of 2020 supposed to support member states in ramping and shoring up their economies after the Covid-19 pandemic (Projects could choose between digital or green objectives interchangeably). But also, it is present in the European Green Deal of 2019, which defines Europe as being in a "twin challenge of the green and the digital transformation" and declares "the digital transformation, [...] [as] a key enabler for reaching the Green Deal objectives."EC (2018b) On the other hand, green objectives are barely mentioned in the digital strategies of the EUC, namely the Digital

EU Programme, or Europe's Digital Decade. In the more recent Strategic Foresight Report of 2022, titled "Twinning the green and digital transitions in the new geopolitical context," the concept received a bit more depth after it was heavily used for 4 years and guided a number of policy proposals.

But what actually is this "Twin-Transition"? In a detailed explanation in the latest EUC strategic foresight report, the digital and green transitions are both on top of the EU's political agenda. They have massive consequences for the future of the EU. These transitions are understood as "different in nature and each subject to specific dynamics." "Twinning" is used as a verb, representing a process that the EU should actively pursue, for them to reinforce each other. The sustainability of the digital sector depends on renewables, renewable hydrogen, and nuclear energy. In a more general context, the two simultaneous transformations of the European Production and Consumption System are presented. Both have strong implications for society, politics, and the economy, and both hold equal importance for the EU's long-term strategy. They are viewed as inevitable, mutually beneficial, and especially fostering the digital transition is expected to provide solutions for the ecological crisis. The second interpretation, although not directly expressed by the EUC, found its way into policy documents and represents the common understanding of the framework.

The "Twin-Transition" discourse presents the Green and Digital Transitions as simultaneously similar and independent. This concept paints a picture of two closely related processes, each demanding equal attention and urgency. They both respond to external pressures and are constrained by existing technologies. However, they are also seen as somewhat separate. The digital transition can progress on its own, independently of sustainability efforts. As long as we mitigate the carbon footprint of digital infrastructures, the digital transition can even benefit the green transition. In contrast, the green transition is not significantly influenced by other industrial policies pursued by the European Union.

3 The Green and the Digital Transition

Yet, what are these two transitions exactly and how do they interact?

In the European Union, the Green Transition, as embodied by the documents of the EU Green Deal of 2019/20, understands the economic system as the major driver of climate change, environmental degradation, biodiversity loss, and air pollution. It sets specific targets for industrial policy, such as carbon-neutrality by 2050, with the main focus laid on the energy sector and renewable energy. It also mentions additional measures for transport, construction, and agriculture, alluding to a green growth paradigm that aims to increase economic prosperity while achieving climate and ecological targets. The Digital Transition, represented by the "Europe's Digital Decade" framework, has four main objectives: Skills, Business Transformation, Secure and sustainable digital infrastructures, and digitalization of public services. It understands the digital transition as an ongoing process that shapes the future of societies and economies, with the potential to increase prosperity and solve societal challenges but also carrying societal risks such as opinion polarization, growing inequality, security, and disinformation. However, it has few mentions of sustainability questions.

What will be important to understand now is in how far these transitions can be labeled as "Twins", so to say, do they share the same genetic code? We will to so on the lines of urgency of the transitions, the agency we have about them as a society, and how far they can be understood as independent of each other.

While the Green Transition is necessitated by an apparent ecological crisis that amplifies conflicts around the globe, threatens the existence of societies and communities, and increases the probability and intensity of extreme climate phenomena, the Digital Transition merely represents an industrial policy to enhance the EU's competitiveness in future economic struggles. The Digital Transition is characterized by an open field of technology, and it is unclear how it will play out and which technologies will prevail. The EU can create infrastructure and direct funding into those directions that promise the largest well-being potentials. It can take decisions on how to shape the field but is dependent on the actions of others and technological pathways. The Green Transition is playing out in a space of defined technological and structural options that need to be chosen in a political process. The urgency of meeting GHG emissions targets does not allow for the patience to find technical solutions through innovation processes.

Are they independent from each other? Does the Green Transition rely on the Digital one? EUC communication seems to suggest that. The EU Green deal declares "the digital transformation, [...] [as] a key enabler for reaching the Green Deal objectives." In this view, achieving carbon neutrality can only happen through massive investments in digital technologies. The Green Deal documents comprise a large number of technological imaginations meant to enable a fully integrated European Energy market, allow for distance monitoring of air and water pollution, enhance weather forecasting, reduce resource use in agriculture, etc. Yet, looking at the proposed "solutions," they tend to share a focus on efficiency increases in already existing fields and technologies. They do not contribute to the structural adjustments or to the politically driven changes necessary for a successful transition.

But, does the Digital Transition rely on the Green one? Consulting the "Europe's Digital Decade" communications and the strategic foresight report on the "Twin-Transition," it does not. The Green transition contributes to the sustainability of the digital sector through increased use of renewable energy, hydrogen, and nuclear energy. An increased focus on the location management and energy efficiency of data centers is meant to reduce the increased energy demand from digital technologies. Yet, there is no mention of a similar enabling or pressuring dynamic like in the Green case. Considering that the Green Transition aims to tackle threats to the very base of our ability to pursue industrial policies or produce innovations, the exclusion of this relationship regarding a "Twin-Transition" is curious.

The "Twin-Transition" discourse as it is framed by the EUC performs an argumentative somersault: While most research in climate and ecological science, as well as common understanding, would assume that a digital industrial policy program depends on the continuation of climatic and ecological systems and processes, the EUC frames a green transition towards the preservation of a hospitable planet as dependent on investments in digital technologies and industries.

4   Techno-Solutionism

If we accept that the Green and Digital Transitions are fundamentally different from each other and dependencies are as laid out above, why does the EUC present them as "Twins" that depend one-directionally? The limits of the Green Growth agenda of the Green Deal to achieve its set targets are already apparent, and to avoid politically difficult policy adjustments, the established European elites aim to steer the policy discourse towards hopes for technological solutions.

If a political discourse is understood as productive, as shown in the introduction, it defines the imaginative space in which the participants can think and therefore pre-determines which conclusions can be drawn from the discourse. In this concrete example, the imaginative space for policies for the Green Transition gets swarmed by technological options and opportunities that allow for a continuation of a green growth imagination, which preserves economic growth, competitiveness, and established middle-class standards of living as the highest goods of economic policy while searching for solutions to the ecological crisis.

Stirring the discourse away from honest political discussions and decision-making about the direction of the Green Transition becomes necessary since there are already strong indications that the direction the Green Deal took will not deliver the promised results since it is not in line with contemporary research on sustainability (Eckert and Kovalevska (2021)). The assumption of possible growth decoupled from emissions of industrial countries, which is repeatedly pushed by European institutions, is difficult to prove empirically and in its most optimistic scenario unlikely to happen fast enough to meet the necessary GHG reductions to prevent severe temperature increases (Vogel and Hickel (2023)). The Green Transition as envisioned by the EUC has massive material and resource needs. For example, to create the energy provision infrastructure and battery capacity needed for the envisioned electrification of society and individualized private transport, the EU needs to be supplied with vast amounts of raw materials, which will mostly be extracted under socially and environmentally questionable conditions in countries of the global south (Hickel and Kallis (2020)). While ecologically dangerous, this dynamic also reproduces colonial dependencies and structures of exploitation (Bassey et al. (2023)). A third shortcoming of the EGD is pointed out by a more ecologically minded section of scholars. While it is evident that the strength and effects of climate impacts rely on many factors beyond global warming, such as patterns in land use and changing patterns of human behavior, the EGD retains a strong emphasis on emission reductions over other ecological policies.

Confronted with these shortcomings, it is politically easier to evoke images of a clean and digital future based on technological solutions instead of changing core assumptions or pursuing structural solutions.

The "Twin-Transition" discourse becomes one of Techno-Solutionism (Sadowski (2020); Morozov (2013)). The idea that major problems facing humanity can be solved with technological approaches. This tech-utopia persists despite the fact that "many contemporary problems were created by earlier applications of science and technology" (Huesemann and Huesemann (2011)). It embodies a strategy of epistemic post-ponement (Dickel (2021)) that prevents society from taking action by preventing it from reaching an understanding of the matter at hand. Cáceres and

Gras (2020) describe this discourse as an "escape forward" that aims to "overcome biophysical contradictions" of capital accumulation processes through imagination.

The core of the strategic foresight report "Twinning the green and digital transitions in the new geopolitical context" is presenting the digital technologies that will contribute to the Green Transition. These include digitalization of energy, more efficient cross-market energy provision, automated demand and supply matching, and forecasting, smart grid adjustments to weather conditions. In the transport sector, the report envisions a future of fully electrified personal and commercial transport, charging demand automatically managed, traffic forecasting to decrease energy use, self-driving cars, and multi-model mobility solutions. In the industrial sector, the focus is on energy demand management, digital twins for pre-testing prototypes, data-driven optimization, sensor and tracking technology for better maintenance, and closed-loop recycling. The construction sector aims for smart buildings and meters to reduce energy consumption, better digital design to increase energy use and loss projections. In agriculture, digital sensing and space-based solutions are expected to reduce water, pesticide, fertilizer, and energy usage, bioinformatics to increase knowledge of biochemical processes, and blockchain-based tracking to transparently trace food origins.

While most of these "solutions" can be criticized for perpetuating specific problems or not being very realistic for broad usage, the most important shared characteristic is that none presents a disruptive technology able to change the underlying problems of the ecological crisis. They are all incremental by nature and, therefore, unable to bring the required gains for "enabling" the Green Transition, which requires structural decisions for and against productive processes as well as consumption management.

The EUC developed a discourse of the "Twin-Transition" that depicts the Green and Digital transitions as too similar in urgency and agency and establishes a mixed-up dependency between the two. This discourse was necessitated by the apparent shortcomings of the EU interpretation of the Green Transition, which is not able to deliver its promises. The "Twin-Transition" discourse establishes technological solutions as the prime alternative to achieve the Green Transition Goals, although they only focus on relative efficiency increases.

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