When two transitions collide: the need for mutually beneficial digital and environmental transitions

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The circular economy and digital transitions are currently two of the most investigated phenomena in economy and public affairs. Both of them raise a wide range of transversal issues, from sustainability to ethics. It is however quite rare to find actors who are trying to link these two topics. This may be due to the lack of expertise in both aspects, and the pressure on policy-makers to bridge the digital and circular economies is drastically rising. While the implementation of the circular economy always seems to be too slow in front of the environmental challenges our societies face, the sustainability of our digital footprint is questioned. How can the circular economy and digital be mutually beneficial and what can be done to strengthen these linkages?

How can digital solutions boost the implementation of a better circular economy?

In opposition to a linear economy which is based on a "take, make, dispose" model of production, the circular economy aims to close the loop of production by including consumption and waste management into the evaluation of a given product's life cycle[1].

Digital solutions should be in the future regarded as an effective way of easing and boosting the shift of economic actors, especially SMEs, to circular models of production. Several actors are already proposing solutions that could have an important impact if implemented at a wider scale:

- A solution as simple as **software** adapted to the needs of a specific sector can improve production models. UPMADE offers software for textile brands and manufacturers to have a global overview of production, fabric and design information to conduct a gap analysis and create a new product without new costs.
- **Blockchain**[2] is another technology which can significantly improve the transparency and the accountability of economic actors – both companies and consumers. For example, RecycleToCoin is a mobile app, which provides a reward system to recycle plastic, aluminium and steel cans in the United Kingdom.

The need for a more circular development of digital technologies

The development of digital technologies can also benefit from the lessons of the circular economy to ensure a more sustainable future. Nowadays, the Internet represents 7% of global electric consumption

[1] For a more detailed definition of circular economy, see https://www.ellenmacarthurfoundation.org/circular-economy
[2] For a more comprehensive approach to blockchain, see http://www.lighthouseeurope.com/index.php?id=69

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and emits as much CO_2 as the aviation industry, whereas global internet traffic should triple by 2020 (in comparison to 2017). Beyond the energy impact of these activities, the infrastructure itself is demanding on natural resources and materials. The production of a smartphone requires 70 kilos of materials, while a computer requires 240 kilos of fossil fuels, 22 kilos of chemicals, and a ton and a half of water[3].

Conducting a life cycle assessment of a single Internet research is a very difficult – it however allows to grasp roughly the huge amount of materials and energy needed. Technologies such as artificial intelligence, which relies on a large number of servers to allow machine learning, will represent an even bigger cost to the environment.

Despite widespread advice on how to use digital equipment more sustainably, a wider reflection will be needed from companies and States to ensure a viable future for digital technologies. Policy makers seem to only have encouraged the recycling of batteries and electronic equipment, while large companies have tried to balance their emissions of CO_2 by producing renewable energy. The question of eco design is still at this stage marginal – e.g. the concept of Fairphone is lauded but its success remains limited.

- **What can be done to improve the linkages between the circular and digital economies by companies and policy makers?**

Policy makers have given impetus to economic actors to shift toward a more circular economy by designing incentive policies. The European Union adopted a Circular Economy Package in June 2018[4], which primarily sets recycling goals: Member States are expected to reach a recycling rate of 55% by 2025, 60% by 2030 and 65% by 2035. Even so, a proactive policy maker such as the European Commission, has focused on recycling and on setting goals, rather than promoting effective solutions to boost a more circular economy overall.

On the other hand, policy makers are designing and implementing regulations for the digital sector – trying to balance the protection of consumers and fostering innovation. The European Union has been a pioneer in data protection policy with the implantation of the General Data Protection Regulation on May 25th, 2018. The European executive is still pushing for additional regulations to further protect personal data[5] and businesses using platforms[6]. However, the impacts on the environment or the importance of digital technologies for a more circular economy are not taken into consideration in these proposals.

Given the importance of linking these two major transitions, several ideas are emerging to decide on innovative policies and projects that will be supporting and accelerating virtuous circles:

- **A special status for ecological data**, which could be free licensed as a default setting, in order to intensify the use of such data in policy making and in order to favor innovation, without regulatory obstacles[7];
- **The development of smart cities**, which are based on digital technologies to promote more circular and environmental friendly cities, can become a fertile ground to facilitate and promote solutions – the Malaga Valley in Spain is a shining example.

Circular economy and digital actors have in common the strong will "to change the world" – will the European Union will be able to create the conditions for these sectors to engage into a virtuous dialogue.

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[3] Numbers taken from n° 26 of *Socialter*, see http://www.socialter.fr/fr

[4] Published in the Official Journal of the European Union on June 14th, 2018, see https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2018:150:FULL

[5] Proposal for a Regulation on Privacy and Electronic Communications, see http://www.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2017/0003(COD)&l=en#tab-0

[6] Proposal for a Regulation on promoting fairness and transparency for business users of online intermediation services, see http://www.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2018/0112(COD)&l=en#tab-0

[7] Several actors are mentioning this option, see "Les données, nouveau moteur de la transition écologique ?" and "Ecological data sharing"