Three strategies to a greater value chain accountability

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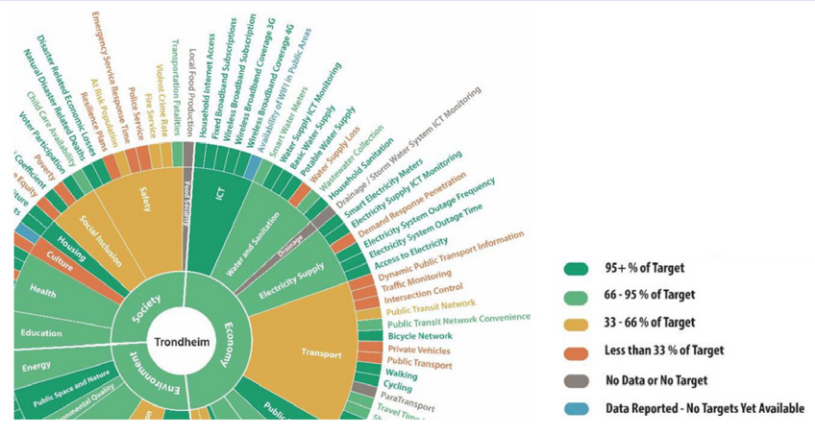
The daily meal on a modern individual's plate travels a complex path and tracing its journey can present a serious challenge[1]. Yet there is a growing tradition of demanding transparency and reconnection to food value chains, given that groceries' ambiguities (ethical and environmental, for instance) often conceal production realities from our consciousness and cognition[2]. This report looks at three current strategies of answering such demand for accountability and responsible production processes: public bureaucracy, certification systems, and blockchain technology.

1 Public bureaucracy. The modern bureaucratic organisation of society relies on specialised expertise, rules, and procedures[3]. Thereby, a contemporary grocery item travels through processes and intermediaries, which tends to obscure the value chain comprehensibility[4]. Correspondingly, worries about corruption and influence, but also of excessive rigidity, have inspired parliamentarian-reformist action to transform this bureaucratic landscape of food chains more transparent.

For instance, in 2019, the European Union (EU) responded to the European citizens' petition[5] *"Stop Glyphosate"* and its demands to confine industries' political impact and to augment the science-based decision-making. The new EU regulation[6] is to guarantee the autonomy of the studies submitted by industry to risk assessment processes. Additionally, all the studies are made accessible to citizens' scrutiny.

Standardised measurements and systematic methods, in turn, aid the evaluation of bureaucratic performance and detect its (mal)functions. For example, United Nations' *Key Performance Index*[7] is a sophisticated method to collect data and evaluate the municipal performances on sustainable development goals (SDGs). Such an analytical initiative, as like the above-mentioned EU regula tion, contributes to the development of the best bureaucratic practice, i.e., smart regulations, legitimate middlemen, and transparent procedures.

1 Eden et al. (2008); Hughes & Reimer (2004).
2 Eden et al. (2008).
3 Weber (1978).
4 Bumblauskas et al. (2018).
5 European citizens' initiative ECI(2017)000002 on banning glyphosate.
Available at: https://europa.eu/citizens-initiative/initiatives/details/2017/000002_en.
6 Regulation (EU) 2019/1381 on the transparency and sustainability of the EU risk assessment in the food chain.
Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019R1381.
7 United smart sustainable cities (2017).
Available at: https://www.itu.int/dms_pub/itu-t/opb/tut/T-TUT-SMARTCITY-2017-9-PDF-E.pdf.



Images 1. & 2. the evaluation of the city against the Key Performance Indicators.
The case of Trondheim, Norway. Snapshots from the report. Source: United Nations (2020).

2 Certification systems are another attempt to counter the distancing of the citizen from the social and environmental relations entangled with the commodity value chain[8]. In the context of minimal traceability, institutionalised certificates, labels, and standards have become consumer tools to catch up with the disconnected events on the value chain. In other words, a certificate works as a trust system to support consumers' agency to reconnect with the distant food production processes and sites[9]. It is via the standardised quality criteria, but also via images, imaginaries and conventional codes (e.g., green colour is associable with an ecological product, see: Image 3.) through which certificates give coordination to ethical consumption[10]. Henceforth, to interpret the mediated knowledge on the value chain separately from imaginaries and myths can be a cognitively challenging task[11].

Image 3. The green colour or a figure of a leaf allow an intuitive connotation to ecological sustainability yet trusting on this connection requires further critical elaboration from consumer's side.
Source: Giovannucci et al (2013).

8 Eden et al. (2008).
9 ibid.
10 Bryant & Goodman (2004); Maruyama et al. (2021).
11 Bryant & Goodman (2004); Eden et al. (2008); Guthman (2004); Maruyama et al. (2021).

3 Blockchain is a promising technology to produce transparency and build trust in food value chains[12]. By aggregating blocks of information from different moments of production, distribution and retail, a food product gets an immutable digital record that follows the product throughout its production process in the supply chain[13]. Accessible to all stakeholders, the authenticity and quality of the product can be verified in a radically transparent manner[14]. Blockchain technology minimises the risk of corruption, as any attempt of altering information within the chain requires consensus between multiple nodes of the connected network. Blockchain has a decentralised maintenance and henceforth it is a system of collective truth not constructed by a merited authority (like a lawmaker, scientist, or an NGO) but by the popular consensus[15].

By bypassing intermediates, decentralising maintenance, and checking traditional professional hierarchies and dependencies, blockchain technology seems to produce action beyond the ambiguities of modern bureaucratist epistemology. According to blockchain advocates, its hyper-transparency would enable consumers, retailers, and other actors to trace the food chain without middlemen or third-party trust systems (e.g., certificates), which means less economic costs and few moments for interests' influence[16].

Yet critiques have pointed out some environmental and social concerns. As controversy around bitcoin has expressed, blockchain technology can be very energy consuming[17], though arguably not necessarily[18]. Moreover, some critiques are questioning whether blockchain's decentralising practice of power and maintenance will translate into more democracy. Herian (2018) expresses the risk of power flowing mainly to the capitalist class if citizenship-based public decision-making and political dialogue become overtaken by economic interests and immutable systems. Given the recognised potentiality of blockchain technology to enable significant social transformations, notably in the infamous form of internet of things (IoT), the immutable digital record "safe from external inferences" anticipates politics of access and inaccess[19]. Hence, the unprecedented traceability and immunity offered by the blockchain hyper-transparency could build significant trust and agency to the consumer, retail, and owner ends. Nonetheless, concerns over democracy, equity, environment, and dissemination of power remain central and must be addressed.

Conclusions:
This report looked at three different strategies to answer the growing demand and food chain transparency and reconnection. Regarding public bureaucracy, several regulations and measuring practices aim to depict the best practices, alleviate drawbacks, and develop the organisation with minimal disruptions to the liberal democratic ethos of representative democracy, specialised expertise, and politics of regulation. Certification systems in turn introduce third-party trust systems to the problem of non-traceability and disconnection, a solution that is ultimately realised by consumer agencies. Lastly, blockchain technology promises a gospel of hyper-transparency, immediacy, and significant traceability. However, blockchain technology carries a radical re-interpretation of the social system, subjectivity, and democracy. The potential of blockchain to facilitate democratic civil society remains to be determined but delivers the promise of providing citizens and consumers with a means to reconnect with the productive processes underlying their daily meals.

12 Keogh et al. (2020).
13 Bumblauskas et al. (2020).
14 ibid.
15 Aste et al. (2017).
16 Bumblauskas et al. (2020); Keogh et al. (2020).
17 Badea & Mungiu-Pupazan (2021).
18 To respond to the critics, Sedlmeir et al. (2020) argue that blockchain technologies are not particularly homogenous, and that the arguments about energy consumption "insanity" should be regarded with care.
19 Käll (2018).

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12 Keogh et al. (2020).
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