Sustainable consumption in the digital age

A plea for a systemic policy approach to turn risks into opportunities

Digitalization offers opportunities for sustainable consumption patterns. However, the patterns enforced by present digital business models are not sustainable. Current European Union regulatory approaches for both consumers and environmental policies do not systematically address this challenge. By introducing "positive accountability," we propose a systemic policy approach to hold digital companies accountable for their impact on consumers and the environment; supporting sustainable consumption in the digital age.

Maike Gossen, Otmar Lell

Sustainable consumption in the digital age. A plea for a systemic policy approach to turn risks into opportunities
GAIA 32/S1 (2023): 71–76 | **Keywords:** consumer policy, digital companies, digitalization, environmental policy, sustainable consumption

The interplay of digitalization, sustainability, and consumption

Digitalization and sustainability are often referred to as two megatrends that are shaping the economy and society (Del Río Castro et al. 2021, BMU 2020). However, the two phenomena are very different: digitalization is massively changing reality and influencing almost every aspect of our lives, while sustainability is a normative goal that has not yet become a reality in most areas. We believe this is especially true in the area of sustainable consumption. We agree with other scholars that whether digitalization supports or threatens sustainable goals depends on how it is shaped by political and societal actors (Frick et al. 2021, Lange and Santarius 2020, Osburg and Lohrmann 2017, WBGU 2019). In the area of consumption, digitalization has the potential to support sustainable development by promoting reuse, repair, sharing, and the circular economy. Although these effects are already being observed to some extent (Gossen et al. 2022), we believe these positive trends are outweighed by unsustainable consumption patterns that are perpetuated and reinforced by digital business models (e.g., Lange and Santarius 2020).

The dominance of growth and profit in our economy and society is driving digitalization. This trend tends to have a negative impact on the environment, as it enables increases in effectiveness and productivity that translate into lower prices and consequently overproduction and overconsumption (Pfeiffer 2021). At the same time, digitalization has significantly changed the way market processes work: to gather data about individuals and the world around them, digital platforms employ the latest data analytics methods and computational capabilities with the goal of "to know, control, and modify behavior to produce new varieties of commodification, monetization, and control" (Zuboff 2015, p. 85). This "surveillance capitalism" (Zuboff 2015) has given unprecedented power to technology corporations, while tracking consumers' online behavior to personalize online content and increase revenue is likely to increase consumption (Kahlenborn et al. 2018, Kish 2020).

We believe that it is both possible and necessary to shape digitalization in ways that promote sustainable consumption. However, it seems that policy initiatives addressing digitalization and consumption have not yet achieved this. With this *Forum* article, we aim to contribute to a comprehensive, systemic policy approach to sustainable digitalization in the consumption sector. We do this in two steps. First, we provide illustrative examples of current policy approaches that are shaping the impact of digitalization on sustainable consumption. Second, we propose approaches for a systemic policy framework to promote sustainable consumption in the digital age.

Current policy agenda towards sustainable consumption in the digital age

Consumer policy approaches to digitalization

Ubiquitous data collection, unfair discrimination by algorithms, and the widespread use of so-called dark patterns threaten consumer privacy and undermine digital sovereignty. From a sustainable consumption perspective, these manipulations and privacy violations mean that online shopping overconsumption is encouraged (D4S 2022). A number of policy initiatives have been taken in the European Union (EU) to address these features of >

Dr. Maike Gossen | Technische Universität Berlin | Department of Socio-Ecological Transformation and Sustainable Digitalization | Institute for Vocational Education and Work Studies | Berlin | DE | maike.gossen@tu-berlin.de

Dr. Otmar Lell | ConPolicy – Institute for Consumer Policy | Berlin | DE | o.lell@conpolicy.de

https://doi.org/10.14512/gaia.32.S1.11
Received May 16, 2022; revised version accepted November 27, 2022 (double-blind peer review).

digitalization. Below, we explain the regulatory approach underlying the most prominent policy initiatives from a consumer policy perspective.

Privacy policy

The *EU's General Data Protection Regulation (GDPR)* (Regulation [EU] 2016/679) is seen as a global milestone for privacy protection and has inspired other governments to take similar initiatives (Heine 2021). However, the *General Data Protection Regulation* has not yet curbed extensive data collection practices. While data protection authorities have been able to force digital companies to change certain aspects of their data-based business models, such as the conditions for obtaining consumer consent for data collection (CNIL 2022), the efforts required to enforce the *General Data Protection Regulation*, along with varying interpretations of its legal ambiguities, have led to "uneven and sometimes non-existent enforcement" (EP 2021, margin no. 12).

Consumer rights

The *Digital Services Act (DSA)* (Regulation [EU] 2022/2065) of 2022 represents a major change in the regulation of digital platforms. First, it establishes how digital platforms must behave in the market. It prohibits the manipulation of consumers through so-called dark patterns, targeted advertising aimed at children, and the use of sensitive data for targeted advertising. Second, the *Digital Services Act* holds platforms accountable for the systemic impact of their business models on society, including the erosion of consumer protection.

Algorithmic accountability

In response to the impact of artificial intelligence (AI) on issues such as autonomy, self-determination, and consumer privacy, the European Commission has put forward a new proposal for an EU legal framework for AI in 2021. If adopted, this *Artificial Intelligence Act (AIA)* (EC 2021) will take another step toward accountability for digital businesses. AI systems will be classified into different risk classes, subject to certain conditions ranging from a ban to compliance with mandatory regulations and transparency requirements. However, the risk assessment introduced by the proposed *Artificial Intelligence Act* is based only on the impact of AI systems at the level of individuals – especially in relation to issues such as discrimination or wrong decisions with negative consequences for an individual. It does not consider the impact of AI systems on society, including the impact on the environment, such as reinforcing unsustainable consumption patterns (Smuha 2021).

Environmental policy initiatives relevant to consumption in a digital world

Digital technologies pose a significant risk to sustainable consumption, as they contribute both directly and indirectly to the increase in energy and material consumption in the digital world. In addition, new options for digital consumption further increase energy and material demand, and digital marketing strategies such as personalized advertising stimulate consumption needs and encourage the purchase of new products (D4S 2022). In the EU, several initiatives under the *European Green Deal* address sustainable consumption as a cross-cutting issue. In the following, we explain the approach taken by environmental policy with regard to the impact of digitalization on sustainable consumption.

It is necessary that both consumer and environmental policy approaches shape digitalization in ways that promote sustainable consumption. However, it seems that policy initiatives addressing digitalization and consumption have not yet achieved this.

Circular economy and sustainable products

The *EU Circular Economy Action Plan (CEAP)* aims to make almost all material goods in the EU market more environmentally friendly, circular and energy efficient throughout their life cycle, and to empower consumers for the green transition. As part of the *Circular Economy Action Plan*, the *Sustainable Products Initiative (SPI)* has proposed a regulation on ecodesign for sustainable products (EC 2022) that establishes a framework for ecodesign requirements for specific product groups. It builds on the existing *Ecodesign Directive* (Directive 2009/125/EC) (which currently covers only energy-related products) and targets almost all categories of physical goods. The legislation will ensure that consumers have a sustainable choice of products on the EU market.

Digitalization as a tool for environmental policy

The *Circular Economy Action Plan* aims to use digitalization as a means to promote sustainable consumption. To this end, Digital Product Passports will be developed to help consumers and businesses make informed choices when purchasing products, facilitate repairs and recycling, and improve transparency about the environmental impact of a product's lifecycle (Pietron et al. 2023, in this issue). In addition to consumer policies aimed at combating misinformation, the *Green Claims Initiative* will require companies to substantiate their claims about the environmental footprint of their products or services by quantifying them using standard methods. The aim is to make claims reliable, com-

parable and verifiable across the EU, thereby curbing greenwashing. As a result, the Dutch Consumer Markets Authority has taken direct action by warning certain online retailers for making misleading marketing claims (Deeley 2022).

At the national level, Germany's *Digital Policy Agenda for the Environment* aims to put digitalization at the service of the environment, climate and nature, and to promote sustainable lifestyles through the use of digital solutions and the alignment of digital markets with sustainability requirements (BMU 2020). The agenda specifically addresses the incentives created by current digital business models to consume more instead of consuming sustainably. In order to steer consumers towards sustainable consumption, the agenda obliges platforms to inform consumers about their sustainability credentials and to include sustainability criteria in their recommendation algorithms.

An interim balance of current policy approaches to digitalization from a sustainable consumption perspective

Summarizing regulatory approaches, we find that specific policies for the digital economy are increasingly emerging in the consumer sector. Step by step, digital companies are being held accountable for certain harms and risks caused by prevailing business models. However, the impact of consumer policy on sustainable consumption remains limited. The goal of consumer policy is to protect individuals from the negative effects of digitalization, for example, manipulation, discrimination or economic disadvantages. Consumer legislation in the digital sector can therefore indirectly support sustainable consumption, for example by taking action against manipulative and privacy-invasive business models. However, promoting sustainable consumption is not the explicit goal of current consumer policies.

As far as environmental policy is concerned, we mainly see various efforts to use the potential of digitalization to promote both a circular economy and information on sustainability for consumers. However, the impact of digitalization on (unsustainable) consumer behavior remains largely unaddressed by environmental policy. In the platform economy, digital business models that are financially dependent on advertising reinforce unsustainable production and consumption patterns and exacerbate related environmental problems (Ramesohl et al. 2022, Gossen et al. 2022). Although environmental policies such as the *German Digital Agenda for the Environment* have begun to address these challenges, no policy approach has emerged that offers viable solutions. The role of digital platforms in particular, in promoting or preventing sustainable consumption patterns remains the "blind spot of platform regulation" (Ramesohl et al. 2022, p. 24).

A systemic policy approach for sustainable consumption in a digital world

Current digital strategy documents state that digitalization should serve the EU's goals and values, that is, promoting "a human-centered, inclusive, secure and open digital environment where digital technologies and services respect and enhance Union principles and values" (Decision [EU] 2022/2481, Art. 3[1][a]). However, as far as sustainable consumption is concerned, we note that we lack the tools to achieve this goal. We therefore argue that the European regulatory approach to digitalization should be completely rethought. Until now, policymakers and law enforcement agencies have been able to claim and prove damages and harms caused by digital business models. This regulatory logic should be reversed: because dominant digital platforms have massive impacts on society, consumers, and the environment, they should be held accountable for ensuring that these impacts are positive. This is an approach that is well established in other sectors of the economy. Infrastructure operators in services of general interest, such as electricity, water, or health services, are subject to extensive regulation to ensure that this infrastructure benefits society. This regulatory approach can also be applied to digital platforms, as they represent the informational infrastructure of society in the digital age (Busch 2021). Consequently, digital companies should on the one hand be required to discontinue business models that have obvious negative consequences for consumers and society, and on the other hand they should be held accountable for continuously improving their impact on consumers and society.

Putting an end to ubiquitous surveillance

The most salient and pressing issue to address when considering the negative consequences of digital business models is the manipulation system that has evolved through online advertising. In 2021, $455.30 billion will be spent on digital advertising, or 61% of total media advertising spend (Insider Intelligence 2021), resulting in commercial messages being ubiquitous and the average citizen being highly exposed to advertising on a daily basis. Moreover, not only the quantity but also the quality of advertising has changed. Efforts to increase the effectiveness of advertising in triggering purchases are diverse and include search engine optimization (SEO), personalization, big data, and machine learning. Studies show that personalized advertising drives impulsive buying behavior (Zafar et al. 2021) and that influencer campaigns can stimulate purchase intentions (Jiménez-Castillo and Sánchez-Fernández 2019).

Because dominant digital platforms have massive impacts on society, consumers, and the environment, they should be held accountable for ensuring that these impacts are positive.

>

There are increasing calls to place limits on the collection, evaluation, and analysis of personal data that go beyond the standards of the *General Data Protection Regulation,* which can easily be undermined by consent. During the negotiations on the *Digital Services Act,* a group of members of the European Parliament advocated a ban on tracking-based advertising (Tracking-free Ads Coalition 2021). Although these voices are not reflected in the final compromise, we are convinced that the idea will remain relevant. In addition, strict limits could be placed on the use of personal data. For example, data could only be used to provide a specific service, and disclosure to third parties would be prohibited (Bennett et al. 2021).

Currently, calls to restrict or ban tracking and collection of personal data are motivated by consumer and privacy concerns. Yet these calls have a strong link to environmental policy, as they would not only increase consumer autonomy but also reduce unsustainable consumption patterns. The motivation for tracking consumers is to promote consumption and increase revenue for advertisers and retailers. Thus, if consumers are not tracked, additional consumption will be limited. This will promote digital business models oriented toward the common good and sustainability, which are currently limited to niche markets (Gossen et al. 2022).

Establishing positive accountability for the impact of digital platforms on consumers and society

Setting clear limits to digital business models that have significant negative impacts on consumers and the environment is essential to promoting sustainable consumption in the digital world, but it is not enough. Personalized advertising is just the tip of the iceberg in current digital business models. In Germany, for example, 34 % of the time consumers spend online is spent on websites and apps from *Facebook* and Alphabet, the parent company of *Google* and *YouTube* (Andree and Thomsen 2020, p. 38). These two companies allocate 45 % of subsequent internet activity to other websites or apps (Andree and Thomsen 2020, p. 38). This highlights the strong influence these platforms have on consumer behavior – and when you consider that both platforms rely on advertising as a source of revenue, it becomes clear how great their potential is to drive consumption.

To some extent, digital platforms are already held accountable for the impact of their business models on society through the *Digital Services Act* and the proposed *Artificial Intelligence Act*. We believe that this accountability should no longer be enforced only negatively through prohibitions on manipulation, invasion of privacy, or discrimination. Rather, platforms should be held accountable (and rewarded) for continuously improving their impact on consumers and society. For the impact of digital platforms on consumption, this means that platforms should allow independent researchers access to their data so that these impacts can be explored in detail – as well as the impact of digital platforms on society, for example through fake news and hate speech. Based on these findings, ways should be sought to turn negative impacts into positive ones. One important aspect will be to develop alternatives to advertising-based digital business models (Bennett et al. 2021), possibly based on micropayments for content use (Lanier 2014). Similarly, the impact of search, recommendation, and transaction processes on consumers should be monitored, and these processes should be designed to meet consumers' interests and promote sustainable consumption. The largest online platforms should build a neutral choice architecture that enables consumers to make the same choices they would make if they had the time, information, and incentives necessary to make careful and deliberate choices (Fletcher et al. 2021).

How can we achieve such strong accountability in digital policy? The procedural approach for doing so has already been established: the Institute of Electrical and Electronics Engineers (IEEE), a technology standards organization, has issued *IEEE Standard 7000TM-2021* on "integrating ethical and functional requirements to mitigate risk and increase innovation in systems engineering" (IEEE 2021). To determine the impact of IT systems on values in a given situation, one of the requirements of the standard is extensive stakeholder participation (Spiekermann 2021).

However, aligning digital business models with consumer interests and the goal of sustainable consumption is obviously not in line with the interests of the dominant digital platforms. Therefore, positive accountability of digital platforms should be anchored in the regulatory system. Models for this exist in other areas of regulation: for decades, environmental law has required industry to continuously improve the environmental performance of its products and industries. In the same vein, technology companies should be required to continuously improve their business models to promote both consumer interests and sustainable consumption.

Making this a legal requirement might be less demanding than expected: in consumer law, for example, the necessary shift could be achieved simply by reversing the burden of proof. Digital companies with market power would have to prove that user guidance and recommendation systems are not manipulative in the service of platform interests, but are aligned with consumer interests (Helberger et al. 2021, Fletcher et al. 2021). To meet this burden of proof, they would need to rely on standards for value-based engineering, such as the *IEEE 7000TM-2021* mentioned above.

Outlook

The regulatory rethinking we call for is profound. Further research, social dialogue, and policy agenda setting will be necessary to make it a reality.

What may make the "positive accountability" approach attractive from a regulatory perspective is that it is a natural alternative to the current approach of "siloed" regulation, where specific concerns are addressed through specific rules. The disadvantages of such specific obligations are obvious, as they invite

workarounds and unintentionally disadvantage smaller players (Friederici and Graefe 2021). The "positive accountability" approach would lead to a comprehensive assessment of digital business models and introduce an integrated regulatory approach.

At the same time, it is important to note a limitation of the "positive accountability" approach. This arises from its basis in the synergies between consumer and environmental regulatory goals. If consumers support the idea of sustainable consumption, digital platforms will find many ways to address their needs and interests – by reducing commercial messages in general, favoring sustainable consumption alternatives in searches, and developing recommendations and sustainable shopping assistants. But there will also be situations where there are conflicts between consumer interests and environmental policy goals, especially if we consider that current consumption levels in industrialized nations far exceed planetary boundaries.

Such conflicts between consumer interests cannot be resolved by holding only digital corporations accountable for the environmental impacts of their IT systems and business models.

Rather, it is necessary to set political limits on consumption-driven resource use – just as there is political agreement on reducing climate gas emissions. Digital platforms will need to adapt their algorithms and business models to these limits, and digital accountability will need to be integrated into an even broader sustainable consumption strategy.

Acknowledgement: We would like to thank three anonymous reviewers for their helpful comments.
Funding: This work received no external funding.
Competing interests: The authors declare no competing interests.
Author contribution: Both authors have contributed equally to this work and share the first authorship.

References

Andree, M., T. Thomsen. 2020. *Atlas der digitalen Welt.* Frankfurt am Main: Campus.

Bennett, L., A. Borning, M. Landwehr, D. Stockmann, V. Wulf. 2021. *Treating root causes, not symptoms: Regulating problems of surveillance and personal targeting in the information technology industries.* www.g20-insights.org/policy_briefs/treating-root-causes-not-symptoms-regulating-problems-of-surveillance-and-personal-targeting-in-the-information-technology-industries (accessed May 11, 2022).

BMU (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit). 2020. *Umweltpolitische Digitalagenda.* www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Digitalisierung/digitalagenda_bf.pdf (accessed November 12, 2022).

Busch, C. 2021. *Regulierung digitaler Plattformen als Infrastrukturen der Daseinsvorsorge.* WISO Diskurs 04/2021. Bonn: Friedrich-Ebert-Stiftung. https://library.fes.de/pdf-files/wiso/17527.pdf (accessed January 24, 2023).

CNIL (Commission Nationale de l'Informatique et des Libertés). 2022. *Cookies: GOOGLE fined 150 million euros.* www.cnil.fr/en/cookies-google-fined-150-million-euros (accessed November 5, 2022).

D4S (Digitalization for Sustainability). 2022. *Digital reset: Redirecting technologies for the deep sustainability transformation.* Berlin: TU Berlin. https://doi.org/10.14279/depositonce-16187.

Decision (EU) 2022/2481. *Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030.* Official Journal of the EU L 323/2022: 4–26.

Deeley, R. 2022. *H&M, Decathlon dial back claims to dodge greenwashing crackdown. Business of Fashion.* www.businessoffashion.com/news/sustainability/hm-decathlon-to-make-donations-dial-back-sustainability-claims-to-avoid-dutch-greenwashing-crackdown (accessed November 10, 2022).

Del Rio Castro, G., M. C. G. Fernandez, Á. U. Colsa. 2021. Unleashing the convergence amid digitalization and sustainability towards pursuing the *Sustainable Development Goals (SDGs):* A holistic review. *Journal of Cleaner Production* 280/1: 122204. https://doi.org/10.1016/j.jclepro.2020.122204.

Directive 2009/125/EC. *Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products.* Official Journal of the EU L 285/2009: 10–35.

EC (European Commission). 2021. *Proposal for a Regulation (EU) of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act).* COM/2021/206 final.

EC. 2022. *Proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products.* COM/2022/142 final. https://ec.europa.eu/environment/publications/proposal-ecodesign-sustainable-products-regulation_en (accessed January 24, 2023).

EP (European Parliament). 2021. *European Parliament resolution of 25 March 2021 on the Commission evaluation report on the implementation of the General Data Protection Regulation two years after its application (2020/2717(RSP)).* P9_TA(2021)0111. https://www.europarl.europa.eu/doceo/document/TA-9-2021-0111_EN.pdf (accessed January 24, 2023).

Fletcher, A., et al. 2021. *Consumer protection for online markets and large digital platforms.* Policy discussion paper 1. New Haven, CT: Yale Tobin Center for Economic Policy. https://tobin.yale.edu/sites/default/files/pdfs/digital%20regulation%20papers/Digital%20Regulation%20Project%20-%20Consumer%20Protection%20-%20Discussion%20Paper%20No%201.pdf (accessed May 11, 2022).

Frick, V., M. Gossen, J. Pentzien, D. Piétron, R. Tangens. 2021. Policies to transform the internet from marketplace to public space. *Ökologisches Wirtschaften* 36/01: 36–40 https://doi.org/10.14512/OEWO36019.

Friederici, N., I. Graefe. 2021. Beyond GAFAM: How size-or-silo regulation fails to account for organisational diversity in the platform economy. *Internet Policy Review.* https://policyreview.info/articles/news/beyond-gafam-how-size-or-silo-regulation-fails-account-organisational-diversity (accessed April 30, 2022).

Gossen, M., V. Frick, O. Lell, G. Scholl. 2022. *Politik für nachhaltigen Konsum in der digitalen Welt.* Dessau-Roßlau: Umweltbundesamt. www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/uba_politik_fuer_nachhaltigen_konsum_in_der_digitalen_welt.pdf (accessed November 10, 2022).

Heine, I. 2021. *3 years later: An analysis of GDPR enforcement.* Washington, D.C.: Center for Strategic and International Studies (CSIS). www.csis.org/blogs/strategic-technologies-blog/3-years-later-analysis-gdpr-enforcement (accessed May 01, 2022).

Helberger, N., O. Lynskey, H. W. Micklitz, P. Rott, M. Sax, J. Strycharz. 2021. *EU consumer protection 2.0: Structural asymmetries in digital consumer markets.* Brussels: BEUC, European Consumer Organisation. www.beuc.eu/sites/default/files/publications/beuc-x-2021-018_eu_consumer_protection_2.0.pdf (accessed May 11, 2022).

IEEE (IEEE Standards Association). 2021. *IEEE 7000™-2021 standard.* https://engagestandards.ieee.org/ieee-7000-2021-for-systems-design-ethical-concerns.html (accessed May 11, 2022).

Insider Intelligence. 2021. *Worldwide digital ad spending 2021.* www.insiderintelligence.com/content/worldwide-digital-ad-spending-2021 (accessed November 07, 2022).

Jiménez-Castillo, D., R. Sánchez-Fernández. 2019. The role of digital influencers in brand recommendation: Examining their impact on engagement, expected value and purchase intention. *International Journal of Information Management* 49: 366–376. https://doi.org/10.1016/j.ijinfomgt.2019.07.009.

>

Kahlenborn, W., B. Keppner, C. Uhle, S. Richter, T. Jetzke. 2018. *Die Zukunft im Blick: Konsum 4.0: Wie Digitalisierung den Konsum verändert. Trendbericht zur Abschätzung der Umweltwirkungen.* Dessau-Roßlau: Umweltbundesamt. www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/fachbroschuere_konsum_4.0_barrierefrei_190322.pdf (accessed May 07, 2022).

Kish, K. 2020. Paying attention: Big data and social advertising as barriers to ecological change. *Sustainability* 12/24: 10589. https://doi.org/10.3390/su122410589.

Lange, S., T. Santarius. 2020. *Smart green world? Making digitalization work for sustainability.* London: Routledge. https://doi.org/10.4324/9781003030881.

Lanier, J. 2014. *Who owns the future?* New York, London, Toronto, Sydney, New Delhi: Simon & Schuster Paperbacks.

Osburg, T., C. Lohrmann. 2017. *Sustainability in a digital world: New opportunities through new technologies.* Heidelberg: Springer. https://doi.org/10.1007/978-3-319-54603-2.

Pfeiffer, S. 2021. The greater transformation: Digitalization and the transformative power of distributive forces in digital capitalism. *International Critical Thought* 11/4: 535–552. https://doi.org/10.1080/21598282.2021.2005656.

Piétron, D., P. Staab, F. Hofmann. 2023. Digital circular ecosystems: A data governance approach. *GAIA* 32/S1: 40–46. https://doi.org/10.14512/gaia.32.S1.7.

Ramesohl, S., J. Wirtz, A. Gunnemann, R. Weier. 2022. *Digital-ökologische Staatskunst. Plattformen im Dienst der Nachhaltigkeit.* https://codina-transformation.de/digital-oekologische-staatskunst (accessed November 05, 2022).

Regulation (EU) 2016/679. *Regulation (EU) No 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation).* Official Journal of the EU L 119/2016: 1–88.

Regulation (EU) 2022/2065. *Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a single market for digital services (Digital Services Act).* Official Journal of the EU L 277/2022: 1–102.

Smuha, N.A. 2021. Beyond the individual: Governing AI's societal harm. *Internet Policy Review* 10/3. https://doi.org/10.14763/2021.3.1574.

Spiekermann, S. 2021. *Value-based Engineering:* Prinzipien und Motivation für bessere IT-Systeme. *Informatik Spektrum* 44/4: 247–256.

Tracking-free Ads Coalition. 2021. *Tracking-based online advertising threatens our democracy through micro-targeted manipulation. We pledge to put an end to invasive online ads in Europe with bold legislative reform.* https://trackingfreeads.eu (accessed May 08, 2022).

WBGU (Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen). 2019. *Unsere gemeinsame digitale Zukunft.* Berlin: WBGU.

Zafar, A.U., J. Shen, M. Shahzad, T. Islam. 2021. Relation of impulsive urges and sustainable purchase decisions in the personalized environment of social media. *Sustainable Production and Consumption* 25: 591–603. https://doi.org/10.1016/j.spc.2020.11.020.

Zuboff, S. 2015. Big other: Surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology* 30/1: 75–89. https://doi.org/10.1057/jit.2015.5.

Maike Gossen
Studies of sustainable management at Berlin School of Economics and Law, Berlin, DE (MA). PhD at Technische Universität (TU) Berlin; topic of the doctoral thesis: *Sufficiency-oriented marketing of companies.* Since 2021 postdoc researcher at TU Berlin. Previous occupation at Institute for Ecological Economy Research (IÖW), Berlin. Research interests: sustainable consumption, sustainable marketing, sufficiency, digitalization.

Otmar Lell
Studies of law at Regensburg University, DE, and at Tulane Law School, New Orleans, USA. Since 2020 project manager at ConPolicy – Institute for Consumer Policy, Berlin, DE. Previous occupations at the Federal Environment Agency (1996 to 2001), Dessau-Roßlau, DE, the Federal Ministry for the Environment (2001 to 2002), and the Federation of German Consumer Organisations (2002 to 2020), both Berlin. Research interests: regulatory approaches in consumer policy, digitalization, and sustainable consumption.

GAIA ECOLOGICAL PERSPECTIVES FOR SCIENCE AND SOCIETY

PUBLISHER
oekom – Gesellschaft für ökologische Kommunikation mit beschränkter Haftung | Waltherstr. 29 | 80337 Munich | DE | *www.oekom.de*
Partners and shareholders: *Jacob Radloff,* Feldafing, 77%, and *Christoph von Braun,* Munich, 23%

ADVERTISEMENTS
Karline Folkendt | oekom | +49 89 544184217 | anzeigen@oekom.de

PRINTER
Friedrich Pustet GmbH & Co KG | 93008 Regensburg | DE | *www.pustet-druck.de*

FREQUENCY Four times a year.

SUBSCRIPTION
Trial subscription (2 issues including shipping in Germany): 19.– EUR | Subscription: private: 129.– EUR; institutional: 225.70 EUR; reduced: 83.80 EUR | Single issue: 31.– EUR. VAT included, plus shipping. Cancellations six weeks before end of subscription year. Payment in advance.

SUBSCRIPTIONS, DISTRIBUTION
Verlegerdienst München GmbH | Aboservice oekom | Gutenbergstr. 1 | 82205 Gilching | DE | +49 8105 388563 | Fax: +49 8105 388333 | oekom-abo@verlegerdienst.de
www.oekom.de/gaia/abonnement

ACCOUNT for Germany: Postbank Hamburg | IBAN DE19 2001 0020 0007 6232 03 | BIC PBNKDEFFXXX
for Switzerland: PostFinance SWISS POST | IBAN CH73 0900 0000 4019 4607 4 | BIC POFICHBEXXX

Since 2008, oekom offsets its unavoidable CO_2 emissions.

ISSN (Print) 0940-5550, ISSN (Online) 2625-5413

Printed on Circle Volume White, certified with The Blue Angel.

FSC www.fsc.org RECYCLED Aus Recyclingmaterial FSC® C014889