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EDITORIAL

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Fostering Socially and Ecologically Sustainable Digitalisation of Welfare States

Paula Saikkonen [1] **and Marta Choroszewicz** [2]

[1] Finnish Institute for Health and Welfare (THL), Finland
[2] University of Eastern Finland, Finland

Correspondence: Paula Saikkonen (paula.saikkonen@thl.fi)

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Abstract

This thematic issue discusses how AI and digital technologies often overlook vulnerable citizens and reinforce inequalities. Articles highlight challenges like digital exclusion, excessive reliance on individual agency, and declining institutional trust. Socially sustainable digitalisation must ensure equitable access, offer in-person alternatives when needed, and uphold legitimacy. Often neglected ecological concerns must also be addressed through responsible data use and energy-conscious ICT systems. Achieving sustainability requires coherent policies that embed sustainability principles into welfare technology. Interdisciplinary research, citizen involvement, and empowering citizens are essential for a truly sustainable welfare state.

Keywords

artificial intelligence; digitalisation; social sustainability; trust; welfare system

1. Introduction

Digitalisation of societies and welfare systems is often touted as a driver of increased efficiency and service quality, enabling flexibility for service users and a possibility to save on costs. Big data, data analysis tools, and artificial intelligence (AI) are argued to bring opportunities for managers and decision-makers to lead better with knowledge derived from so-called real-time data. Yet, in practice, data pose numerous challenges to interpretation and simultaneous utilisation for multiple purposes (e.g., Hoeyer, 2023). Numerous studies have highlighted a gap between the expectations and the actual outcomes of new technologies. In welfare states, where services are often shaped by strict budgetary constraints, it is essential that reforms lead to genuine improvements.

The starting point for this thematic issue was our observation that sustainability and digitalisation are frequently addressed as separate concerns, digitalisation often being regarded primarily as a technological matter that automatically enhances access to and efficiency in service delivery. Only a limited number of reports have emphasised the ecologically unsustainable aspects of digitalisation or AI. Social sustainability has been predominantly acknowledged within the discussions on "decent work," the platform economy, datafication, and surveillance, rather than focusing on the social sustainability of welfare systems. Digitalisation, datafication and the effects of AI should also be examined as part of the development of societies. New technologies are shaping the conditions for well-being for current and future generations by influencing both social and ecological sustainability. With this thematic issue, we draw attention to the ways in which digitalisation either supports or undermines social sustainability, as policies often overlook its broader implications for social justice.

2. Social Sustainability at the Core of the Welfare System

2.1. Problematising the Current Expectation of Citizens' Strong Agency

The digitalisation and datafication of the welfare systems do not happen in a vacuum. The existing systems and their earlier development have an impact on these processes, political decision-making steers the aims of digitalisation (e.g., cost-efficiency, public or private system supplier, data collection, use of data), and citizens' digital literacy—with other skills and devices—influence their opportunities to utilise digital welfare systems. The welfare systems interact with citizens, especially in changing life circumstances like sickness, parenthood, unemployment, retirement, or rehabilitation. Interaction formulates citizens' perceptions of authorities and public policies may influence people's subjective beliefs on the welfare state and their role in it. For instance, are citizens only customers receiving services or active citizens participating in society?

Digitalised welfare systems, with their novel technologies, reformulate the relationships between citizens and institutions by strengthening social inclusion for some citizens and amplifying old—or creating new—disadvantages for others (Choroszewicz & Mäihäniemi, 2020). For social justice, it is essential that all citizens have access to necessary benefits and services, regardless of their varying skill levels or ability to use digital services (Saikkonen & Ylikännö, 2020). Previous studies have shown the pivotal role of public policies for participation, especially for those who have fewer resources (Shore, 2020). However, when reading policy documents about e-government or promises of AI in the public sector, it is striking how little attention is paid to those who are unable to use digital services.

The topic of social justice was highlighted in several articles in this issue. The articles address both the barriers to digital inclusion experienced by vulnerable groups and the strong normative expectation that citizens must actively exercise their agency in order to secure access to services. Dyrlev (2025) shows that the use and experience of mental health digital solutions (MHDS) in Denmark are socially stratified. Digital and social inequalities intersect, suggesting that MHDS should complement, not replace, in-person mental health services to ensure social sustainability.

Tarkkala et al. (2025) discuss the trend towards digital-first administration. They investigate the interaction between citizens and the state through the analysis of digital pre-screening tests as a new form of "screen-level bureaucracy." Their research highlights the ambivalence of these tests: while these tests can be

useful as communication channels and advice-giving resources, they can also create new barriers to accessing public services.

Mielismäki and Husso (2025) contribute to the ongoing discussion on the challenges, opportunities, and ethical considerations of the integration of AI-driven chatbots into domestic violence support systems. Their study highlights the issue of responsibility in the implementation and use of these chatbots. They also show that while these chatbots have the potential to lower barriers to help-seeking, their limitations in situational assessment may put extensive demand for agency on victims or survivors.

Rebergen et al. (2025) highlight a paradox in digitalized welfare systems: While they work well for well-off citizens with simple needs, those facing complex life situations often struggle. In the Netherlands, libraries provided IT support, but librarians lacked training in welfare systems. This gap frustrated citizens seeking substantive help and placed emotional strain on librarians who felt unable to meet those needs.

Smit et al. (2025) explore digital inclusion and exclusion among low-literate Dutch citizens within a regime of self-optimisation that frames digital participation as both a moral duty and a practical necessity. They show that disadvantaged individuals often rely on trusted family members or neighbors to navigate digital services. Their study emphasises that sustainable digital inclusion requires not only promoting individual self-reliance but also actively incorporating collective learning and supportive community practices.

Palukka et al. (2025) focus on the experiences of mental health rehabilitees in digital encounters. Their study shows how administrative burdens and their costs produce distrust in public administration and socially exclusive identities for marginalised citizens, especially when claiming welfare benefits, such as positions of feeling dispossessed, unreliable, insignificant, and inferior. The study highlights that this positioning of mental health rehabilitees prevents full realization of their citizenship.

2.2. Trust and Equality of the System

The perceived fairness in the service processes is extremely important for trust in the welfare systems, often even more important than realised outcomes (Van Ryzin, 2011). In the Nordic welfare states, institutional and generalised trust have generally been at high levels. Yet, this is not always the case among vulnerable citizens (Palukka et al., 2025; Tetri et al., 2024), which is why more attention should be paid to how they perceive the welfare system. Distrust in welfare systems hampers their legitimacy. The topic of trust was addressed in some articles within this issue. These contributions deepen our understanding of why maintaining and strengthening trust in welfare systems is crucial, especially when implementing new digital tools, services, and AI systems.

Petroons et al. (2025) examine whether algorithmic decision-making (ADM) contributes to harmonized welfare decisions across local agencies in Belgium. Focusing on the REDI system (a digital rule-based algorithmic system designed to assess families' financial needs), findings show that while ADM promotes uniformity in the form and amount of monthly financial support, significant local variation remains. The results point to only partial harmonization, shaped by financial and normative factors at the organizational level.

Rannisto and Vainionpää (2025) discuss in their article what it would take to maintain the high level of trust in the Nordic welfare state when algorithms and AI are part of the welfare systems. They elaborate on the

dichotomy between technological and social studies in trust research and suggest an approach to overcome that.

Palsa et al. (2025) investigate the future imaginaries of datafied education to identify the central features of the Finnish education system, such as the culture of trust and the strong role of the public sector. They discuss how these features might be subject to negotiations in the datafication processes. Their research underscores the importance of inclusive debates on the future of education to ensure that digitalization supports sustainable development in education.

3. The Missing Aspects of Sustainability

By editing this thematic issue, we have gained a better understanding that ecological and social sustainability are still insufficiently integrated into the digitalisation of welfare systems. For social sustainability, it would be important to better understand the relationship between online and on-site services and how they could be combined fruitfully. The welfare systems deliver benefits and services, but they also impact citizens' perceptions of public policies. Furthermore, the welfare systems have a direct impact on ecological sustainability (e.g., energy efficiency, the ecological footprint of the ICT system, GHG emissions) which cannot be ignored.

Ecological and social sustainability should be acknowledged when planning and purchasing the new ICT systems for welfare services. To strengthen sustainability, greater policy coherence is needed. In the digitalisation of welfare systems, this coherence can be achieved through discussions on the foundational principles of new ICT systems' development (see also Rannisto & Vainionpää, 2025). The socially sustainable digitalization requires the involvement of all stakeholders (e.g., citizens, frontline workers, managers, decision-makers). Practices should be planned with careful consideration of where and how digitalisation, semi- and automatic decision-making, or AI bring betterments to all groups of citizens and their well-being (Petroons et al., 2025).

During the joint journey of editing this issue, many activities took place. Apart from having launched a broad call for papers to bring this thematic issue to life, we also organised several panels and workshops on the topic at European scientific conferences. It was fascinating to see the variety of articles and presentations that emerged in response to our call. As readers may notice, the range of methods and topics is extensive in the issue. Yet, despite the broad call, we received only a few articles discussing ecological sustainability in relation to digitalisation, datafication, or AI in the welfare systems. This may reflect our own background as social scientists, but it might also indicate a concerning lack of multidisciplinary research on this topic.

Researchers have outlined some characteristics for sustainable welfare systems (see Bridgen & Saikkonen, 2025), which can be applied to the digitalised welfare system. Firstly, the nine planetary boundaries formulated by the Stockholm Resilience Centre (Richardson et al., 2023) should be considered in the context of digitalised welfare systems. Digitalisation, datafication, and the use of AI consume significant amounts of energy. While energy efficiency and the sources of energy are crucial considerations, it is important to recognise that greenhouse gas emissions and energy consumption also occur in traditional face-to-face service delivery.

Secondly, the welfare systems should become less dependent on economic growth, particularly given concerns about the feasibility of rapidly decoupling economic expansion from greenhouse gas emissions (Büchs, 2021). In digitalised welfare systems, this necessitates careful consideration of how data is used and what kinds of data are produced in the first place. Increasing datafication may also result in unexpected consequences. For instance, in the education system, it may reduce teachers' actual educational leeway and hinder students' opportunities for social mobility (Palsa et al., 2025). Large administrative datasets are also of significant interest to commercial actors, but the implications vary greatly depending on whether data is harnessed for profit-driven purposes or for research aimed at addressing sustainability challenges.

Thirdly, given material and financial constraints, welfare systems should focus more strongly on need-based provisions. In current systems, "need" is often poorly operationalised (Laruffa, 2022). Post-war welfare states have largely relied on expert-defined needs, primarily to determine eligibility and legitimise professionalised services. In digitalised welfare systems, it becomes essential to recognise when face-to-face interaction is necessary for individual assessments (see Dyrlev, 2025). Digital tools and systems can be used for pre-screening in ways that risk excluding individuals (Mielismäki & Husso, 2025; Palukka et al., 2025; Smit et al., 2025; Tarkkala et al., 2025), or they can complement service delivery, such as automated pharmacy vouchers in social assistance or capped out-of-pocket health expenses, as recommended by the WHO.

Fourthly, one characteristic is fair distribution (Büchs, 2021). In digitalised welfare systems, this means equal access and organizing supportive services in a way that adequate services are available for everyone independently from digital skills or devices in use. Furthermore, while access to services and benefits should be easy (digitalised or not), the easy access or automated decision-making should not blur political decisions behind the systems (e.g., eligibility, adequacy of benefits). After all, the welfare system is steered by the policymakers whom citizens have elected.

Fifthly, welfare systems should play an active role in sustainability transitions (Saikkonen & Ilmakunnas, 2023). They can provide support and incentives (Bohnenberger, 2020), for example, by encouraging lifestyle changes and cultural shifts aligned with less resource-intensive, post-consumerist notions of well-being. In digitalised welfare systems, this could involve using broader datasets and AI to improve the relevance of job offers provided by employment services. The system could also generate forward-looking suggestions, such as training or work opportunities with sustainability potential, rather than focusing solely on the current labour market and available vacancies.

Sixthly, citizen involvement is essential. Attention has been directed both to macro-level approaches concerning democratic governance (Büchs, 2021) and to micro-level aspects of policy design (Bohnenberger, 2020), particularly how recipients can influence the support they receive. In both cases, the key concern is to avoid paternalism and to uphold legitimacy (Büchs, 2021). In the context of digitalised welfare systems, this means designing systems that respond to citizens' capabilities and needs, rather than being driven solely by what is available on the market.

We argue that neglecting ecological and social sustainability is short-sighted, particularly given the urgent need for welfare states to tackle environmental crises. Although research on digital welfare systems is growing, it does not appear to accumulate in ways that effectively support the sustainable digitalisation of welfare systems. Academic research often focuses on narrowly defined problems, raising the question of whether we

have adequate tools to synthesise research findings in a way that informs sound political decision-making that would facilitate the transition of welfare states toward ecological sustainability.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

Due to the nature of the research, data sharing is not applicable to this article.

References

Bohnenberger, K. (2020). Money, vouchers, public infrastructures? A framework for sustainable welfare benefits. *Sustainability*, *12*(2), Article 596. https://doi.org/10.3390/su12020596

Bridgen, P., & Saikkonen, P. (2025). Integrated sustainability: What is it and what are its implications for social care in ageing welfare states? In M. Vaalavuo, K. Nelson, & K. Kuitto (Eds.), *Social sustainability in ageing welfare states* (pp.229–250). Edward Elgar Publishing.

Büchs, M. (2021). Sustainable welfare: How do universal basic income and universal basic services compare? *Ecological Economics*, *189*, Article 107152. https://doi.org/10.1016/j.ecolecon.2021.107152

Choroszewicz, M., & Mäihäniemi, B. (2020). Developing a digital welfare state: Data protection legislation and the use of automated decision-making across six EU countries. *Global Perspectives*, *1*(1), Article 12910. https://doi.org/10.1525/gp.2020.12910

Dyrlev, E. K. (2025). Potentials and pitfalls of self-help tools: A survey study of digital psychiatry in Denmark. *Social Inclusion*, *13*, Article 9990. https://doi.org/10.17645/si.9990

Hoeyer, K. (2023). *Data paradoxes: The politics of intensified data sourcing in contemporary healthcare*. MIT Press.

Laruffa, F. (2022). The dilemma of "sustainable welfare" and the problem of the future in capacitating social policy. *Sustainability: Science, Practice and Policy*, *18*(1), 822–836. https://doi.org/10.1080/15487733.2022.2143206

Mielismäki, K. H., & Husso, M. (2025). Ethical implications of AI-driven chatbots in domestic violence support. *Social Inclusion*, *13*, Article 9998. https://doi.org/10.17645/si.9998

Palsa, L., Fagerlund, J., & Mertala, P. (2025). Exploring the futures of datafied welfare state education: Thematic analysis of sociotechnical imaginaries. *Social Inclusion*, *13*, Article 10087. https://doi.org/10.17645/si.10087

Palukka, H., Koski, A., Parviainen, J., & Eilola, L. (2025). Experiencing social exclusion and distrust: Mental health rehabilitees struggling with digital administrative burdens. *Social Inclusion*, *13*, Article 9950. https://doi.org/10.17645/si.9950

Petroons, J., Brotcorne, P., Wagener, M., Hermans, K., & Van Lancker, W. (2025). Algorithmic decision-making and harmonization in multi-level governance welfare practices: Empirical evidence from Belgium. *Social Inclusion*, *13*, Article. https://doi.org/10.17645/si.10289

Rannisto, A., & Vainionpää, F. (2025). Trust-affording action: Citizens' everyday relations with algorithmized public services. *Social Inclusion*, 13, Article 10001. https://doi.org/10.17645/si.10001

Rebergen, M., Swart, J., & Broesma, M. (2025). Directing digital citizenship: How librarians mediate the Dutch digital welfare state. *Social Inclusion*, *13*, Article 9949. https://doi.org/10.17645/si.9949

Richardson, K., Steffen, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Drüke, M., Fetzer, I., Bala, G., Von Bloch, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hoffmann, M., Kummu, M., Mohan, C., Nogués-Bravo, D., Petri, S., . . . Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advance*, *9*(37). https://doi.org/10.1126/sciadv.adh2458

Saikkonen, P., & Ilmakunnas, I. (2023). Reconciling welfare policy and sustainability transition—A case study of the Finnish welfare state. *Environmental Policy and Governance*, *34*(1), 53–64. https://doi.org/10.1002/eet.2055

Saikkonen, P., & Ylikännö, M. (2020). Is there room for targeting within universalism? Finnish social assistance recipients as social citizens. *Social Inclusion*, *8*(1), 145–154. https://doi.org/10.17645/si.v8i1.2521

Shore, J. (2020). How social policy impacts inequalities in political efficacy. *Sociology Compass*, *14*(5). https://doi.org/10.1111/soc4.12784

Smit, A., Swart, J., & Broersma, M. (2025). The regime of self-optimization: Lived experiences of enforced digital inclusion by low-literate citizens. *Social Inclusion*, *13*, Article 10052. https://www.cogitatiopress.com/socialinclusion/article/view/10052

Tarkkala, H., Koulu, R., Snell, K., & Soininvaara, H. (2025). "Complete the test first:" Prescreening tests at the margins of digital public administration. *Social Inclusion*, *13*. https://doi.org/10.17645/si.9971

Tetri, B., Rantanen, T., & Kouvonen, A. (2024). Digital skills and intention to use digital health care and social welfare services among socially marginalized individuals in Finland: A cross-sectional study. *Finnish Journal of EHealth and EWelfare*, *16*(2), 117–130. https://doi.org/10.23996/fjhw.143006

Van Ryzin, G. G. (2011). Outcomes, process, and trust of civil servants. *Journal of Public Administration Research and Theory*, *21*(4), 745–760. https://doi.org/10.1093/jopart/muq092

About the Authors

Paula Saikkonen works as a research manager at the Finnish Institute for Health and Welfare (THL). She is specialised in research on social welfare, well-being, and eco-social welfare state. Her current interests are related to social security, sustainable welfare, ecological and social sustainability, and welfare policies in sustainability transformation.

Marta Choroszewicz is a senior researcher in sociology at the University of Eastern Finland, Finland. Her research includes professional work and careers, social and digital inequalities, AI automation of public administration and services in Finland, and social sustainability in the context of digitalisation and automation of public administration and services.