



OPEN ACCESS

EDITED BY

Mariarosaria Lombardi,
University of Foggia, Italy

REVIEWED BY

Christian Bux,
University of Bari Aldo Moro, Italy
Erica Varese,
University of Turin, Italy
Caterina Tricase,
University of Foggia, Italy

*CORRESPONDENCE

Barbara Smetschka
✉ barbara.smetschka@boku.ac.at

RECEIVED 14 October 2022

ACCEPTED 03 April 2023

PUBLISHED 24 May 2023

CITATION

Smetschka B, Gaube V and Mader K (2023)
Time to care—Care for time—How spending
more time for care than consumption helps to
mitigate climate change.
Front. Sustain. 4:1070253.
doi: 10.3389/frsus.2023.1070253

COPYRIGHT

© 2023 Smetschka, Gaube and Mader. This is
an open-access article distributed under the
terms of the [Creative Commons Attribution
License \(CC BY\)](#). The use, distribution or
reproduction in other forums is permitted,
provided the original author(s) and the
copyright owner(s) are credited and that the
original publication in this journal is cited, in
accordance with accepted academic practice.
No use, distribution or reproduction is
permitted which does not comply with these
terms.

Time to care—Care for time—How spending more time for care than consumption helps to mitigate climate change

Barbara Smetschka^{1*}, Veronika Gaube¹ and Katharina Mader²

¹Institute of Social Ecology (SEC), University of Natural Resources and Life Sciences (BOKU), Vienna, Austria, ²Department of Economics, Vienna University of Economics and Business (WU), Vienna, Austria

Mitigating climate change requires urgent reductions in emissions. Demand-side measures focus on footprints (direct and indirect emissions) of consumption. Analyzing time use brings a novel perspective to discuss the carbon implications of everyday life and the potentials and limitations for decarbonizing consumption. In this study, we show how time-use studies can serve as a bridging concept between sustainability studies and the analysis of human wellbeing for all. We introduce a functional time-use perspective differentiating personal, committed, contracted, and free time. We calculate the average carbon intensity of everyday activities in Austria in 2010 combining the Austrian Time-use Survey and Austrian Household Budget Survey with Eora-MRIO. We find that these activities differ widely in carbon intensity. Personal time is relatively low-carbon intense, while free time activities show large variation in terms of CO₂e footprint/hour. The traditional gendered division of labor shapes the time-use patterns of women and men, with implications for their carbon footprints. Reassessing and sharing unpaid reproductive caring activities are the basis for solving some urgent ecological and social problems. The way household members use their time, the resource demand of households and infrastructure, and the services provided by communities entail each other. Time use, time prosperity, and especially time scarcity determine our quality of life. Caring activities as “time to care” play a crucial role in pathways toward socio-ecological transformation and gender equality. Further research in the field of time, care, and gender studies could be based on this framework and add new perspectives on research on sustainable development.

KEYWORDS

climate change, gender studies, quality of life, sustainable consumption, time use, unpaid work, carbon footprint

1. Introduction

Mitigating climate change to achieve the goal of staying below 1.5°C of warming requires urgent reductions in emissions. Demand-side measures mostly focus on the footprints of consumption, considering direct and indirect emissions of CO₂e. Analyzing society–nature interactions and pathways for a socio-ecological transformation is based on a perspective on everyday practices within specific societies and their specific environmental consequences (Haberl et al., 2021; Plank et al., 2021). Time-use studies provide data on everyday activities and their implications on wellbeing (Gershuny, 2011), the environment (Adam, 1997), gender relations (Sullivan, 1997), or the organization of work and care (Schor, 2000, 2010)

to name but a few authors and fields of research. Ecological economics and climate sciences provide insights into the carbon footprints of these activities (Minx and Baiocchi, 2010; Wiedenhofer et al., 2018).

In this perspective article, we discuss how time-use studies can serve as a bridging concept between sustainability studies and the analysis of human wellbeing, especially when addressing caring activities. This represents a novel and original approach, which is interdisciplinary as it combines time-use research from social sciences with concepts of quality of life and just transition discussed in humanities and political ecology with the aim to find a method to quantify CO₂e emissions of the everyday practice of households in line with climate sciences.

Care has hitherto not been discussed a lot in its relation to sustainable consumption. This new interdisciplinary pioneering research field can draw from different angles and approaches to start a fruitful discussion on a topic that will gain a lot of importance in near future. Therefore, here we present both an assessment of recent works on the question of care, time-use, and climate change and a new perspective on time-use data analyzed for the case of Austria, trying to show how this can contribute to the evolving topic of “Sustainable Consumption and Care”. The last time-use survey for Austria was conducted in 2010, providing the base for our analysis of the carbon footprint in everyday activities (Smetschka et al., 2019). We hereby lay the ground for further discussion and analysis with newer data (i.e., the next round of time-use surveys in Austria 2023 and international compilations). The recent pandemic brought a disruption in time use and the need for caring activities, thereby giving even more importance to future analysis.

The relevant conceptual approaches of socio-ecological transformation and time-use studies and their link to questions of sustainable development, care, and gender equality are presented in chapter 2, followed by the discussion of the results of research on CO₂ footprints per activity and the findings from a recent literature assessment in chapter 3.

2. Relevant concepts adding to a new perspective

This study proposes to address sustainable consumption and care from a time-use perspective. We base this approach on concepts of socio-ecological transformation (section 2.1) and sustainable development and time (section 2.2) and within the context of time-use studies and gender relations (section 2.3). In section 2.4 the concepts of functional time-use and carbon emissions are introduced referring to a case study analyzed for Austria in 2010.

2.1. Socio-ecological transformation

Social ecology—as a scientific approach developed at the Institute of Social Ecology in Vienna (Haberl et al., 2016)—aims to describe the interaction between social and natural systems. Two concepts, social metabolism and colonization of natural systems, constitute the core of the socio-ecological theory. Social ecology is based on the concept of overlapping and interlinked natural and cultural systems, showing a system’s dynamic in which social

development is not independent of the natural environment and ecological and societal structures and processes are interlinked. Society is understood as a hybrid based on both the natural and the cultural sphere, therefore, cannot be analyzed as a whole exclusively from a natural or a social science perspective (Fischer-Kowalski and Weisz, 1999). One core feature of societal interventions in natural systems is that they require human working time (Fischer-Kowalski and Haas, 2016) in the form of paid and unpaid work, which is a focus of interdisciplinary time-use studies.

2.2. Sustainable development and time

The long-time scale of environmental changes such as climate change, biodiversity loss, or soil degradation is in its very logic conflicting with short-term reward and economic interests. Rhythms and synchronization of everyday life affect human wellbeing via the notion of time scarcity or prosperity. Conflicting demands on individuals who have to produce and reproduce all spheres of their lives add pressure. Resource use is linked to economic demand and grows irrespective of production or regeneration rates (Hartard et al., 2006; Biesecker and Hofmeister, 2010; Biesecker et al., 2012).

In scientific and political discourse often the quest to dematerialize everyday life is linked to promoting a more frugal lifestyle. Here, we argue that a socio-ecological time-use perspective can work better than promoting austerity to achieve reductions in resource use. Spending a good time with low-carbon activities, for example, can enhance human quality of life and lower carbon emissions at the same time (Schor, 2010; Reisch, 2015) providing eventually both: more care and climate justice.

Time use is a concept used in sustainability discourses, mostly within research on degrowth and wellbeing. Fischer-Kowalski defines three types of decoupling as shown in Figure 1: welfare, efficiency and consumerism, which all comprise a time component. Time use is an important aspect of wellbeing and welfare, when asking the question of how to measure wellbeing beyond monetary indicators and how to provide necessary caring activities. The critique of consumerism links to questions of sustainable consumption: how much goods or services and how much time do we need for wellbeing? The third question is whether efficiency gains can make up for straining demands on ever-faster living and its impact on wellbeing on the one hand and for higher demands on resource use through additional efficient production on the other hand.

Speed is as important a factor in our economy as efficiency. Typically, both translate into “no waste of time” rather than “no waste of material.” On the contrary, speed and efficiency tend to lead to the substitution of slow low-carbon activities and home production with high material and energy-intense technologies, goods, or practices. Here, general physics applies: the faster you move, the more energy you need. ‘Having no time for anything’ as the epigram of modern life leaves no time for concerns about climate change or other environmental or societal issues (Rosa and Trejo-Mathys, 2013).

When the goal is to achieve wellbeing for all in an ecologically and economically sustainable way, the question of an adequate understanding of wellbeing or quality of life (QOL) is central to sustainable development. In sustainability sciences, it is, therefore,

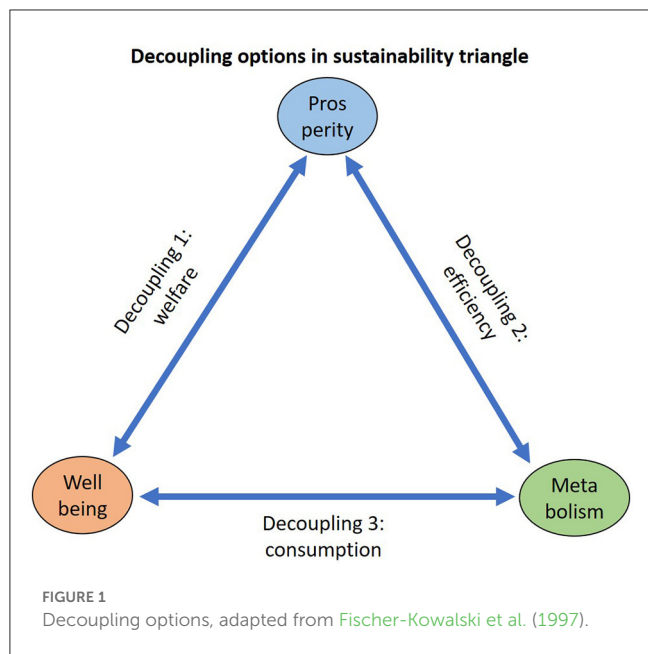


TABLE 1 Functional time-use categories, adapted from Ringhofer and Fischer-Kowalski (2016).

Re/production of system	Functional time-use category	Encompasses activities from time-use surveys
Person	Personal time	Personal care and sleep
Household	Committed time	Household and food; family, care and support
Economy	Contracted time	Employment, study, agricultural production
Community	Free time	Social activities, politics, culture, leisure

important to find indicators to assess the quality of life and changes therein adequately. Time use is an integrative aspect of many facets of quality of life and is considered essential in its monitoring (Carlstein, 1981; Moe, 1998; Mischau and Oechsle, 2005; Mückenberger and Boulin, 2005; Schaffer, 2007; Fischer-Kowalski and Schaffartzik, 2008; Garhammer, 2008). The terms “time scarcity” and “time affluence” (Rinderspacher, 2002; Heitkötter, 2006; Kränzl Nagel and Beham, 2007; Schor, 2010) are used to link economic and social factors and to find alternatives to a solely economic notion of growth and development beyond a more sustainable consumption (Sanne, 2002; de Graaf, 2003; Jackson, 2005; Kasser and Sheldon, 2010). Finally, the European Statistical Office (Eurostat) states that we need a measurement of QOL beyond GDP (Eurostat, 2018) and plans to include time-use data in future European Union Statistics on Income and Living Conditions (SILC) surveys. Furthermore, addressing care justice in the discussion on quality of life can improve the understanding of climate justice.

2.3. Time-use studies and gender relations

Human and societal reproduction are areas where gender studies and sustainability studies have a common interest. Failing to take reproductive work into account adequately is one major critique from gender studies toward economic and social analysis. Demography and population growth are central to the sustainability discourse. Focusing on production and leaving aside reproduction should not swap from economy to ecology (Littig, 2002). Ecological problems can be associated with a disturbed reproductive capability of ecological systems and with the impact of societal reproduction on these systems (Adam, 1997; Spitzner and Hofmeister, 1999). The amount of time invested in childcare differs highly among cultures and time in history. Only contributing an analysis of the reproductive sphere of human activities allows us to grasp the whole impact of human activity in society–nature interactions.

Women’s studies and feminist research have been focusing on “unpaid work” since the 1960s addressing the invisibility of unpaid (women’s) work as well as the particularities and characteristics of this work, like the associated “female socialization and the question of how it comes about that women do so much more unpaid work than men” (Madörin, 2010). Since the 1990s, we have seen an increased focus of research on “care” and “care work.” This shift of focus from unpaid work to care and care work reflects a change in emphasis within feminist theory in general toward focusing on the analytical category of gender, the socially constructed gender-specific role attributions, and expectations that essentially structure the lives of women and men.

Unpaid care work has been devalued as reproductive in the course of the development process of modernity as a whole (Werlhof et al., 1988; Biesecker and Hofmeister, 2006; Rulfes, 2021). Additionally, unpaid activities with emotional relationship aspects like caring are the least likely to be perceived as work, especially when measured against paid work. Feminist research focuses on unpaid care work also in connection with “precautionary economics” (Biesecker et al., 2000; Biesecker and Hofmeister, 2006) and in recent debates on feminist post-growth ideas (Kuhl et al., 2011; Bauhardt, 2013; Dengler and Lang, 2019; Knobloch, 2019). Gender budgeting approaches and the need for feminist complements to the Green New Deal are planned in some countries (Cohen and MacGregor, 2020). If they aim at analyzing public spending in terms of gender and climate justice, this opens up possibilities to save emissions in the care sector as well (Schalatek, 2012). Spatial, urban, and transport planning must also consider care work in order to enable emission reductions. In a “city of short distances” or “15 min city,” neighborhoods should be planned in such a way that the distances between the place of residence and kindergartens/schools, shopping, and employment opportunities are short and can be covered on foot or by bicycle. Public transport should be geared more to the times and needs of care work. Feminist research calls for development away from the car-oriented city toward the people-oriented city (Bauhardt, 1995). Time banks, for example, show a way to relate care work and paid employment and, thus, create more socially and climate-friendly working time quotas (Schor, 2010; Bader et al., 2021).

2.4. Functional time-use and carbon emissions

Time-use studies comprise all daily human activities and their organization in societies. Human time is a resource necessary for the production and reproduction of a person, family, economy, and community (Table 1). This systemic approach translates into functional time-use categories used widely in time-use research and encompasses activities from time-use surveys. Social structure and institutions, and gendered and unequal division of work shape individual time-use patterns as much as household size and distances to be covered. Communal infrastructure and public services available make a difference in time use. Changing time-use patterns are, therefore, rather a question of changing practices than of individual behavior. Time use, time prosperity, and especially time scarcity determine our quality of life (Rosa et al., 2015; Sullivan and Gershuny, 2018). Only few studies investigate how time-use patterns develop in industrial society and what this means in terms of environmental pressure (Jalas, 2002; Druckman et al., 2012; Smetschka et al., 2019).

One example is the case of Austria 2010, where we analyzed carbon footprints of everyday activities in Austria, linking data from the Austrian Time-use Survey and the Austrian Household Budget Survey with the Eora-MRIO for 2009–2010 in order to estimate the household carbon footprints of all time-use activities (Wiedenhofer et al., 2018; Smetschka et al., 2019). Results show that personal, household, and caring time is relatively low-carbon intense, while leisure activities show large variation in terms of CO₂e footprint/hour. The traditional gendered division of labor shapes the time-use patterns of women and men and at the same time has implications for their carbon footprints and the organization of care and work in everyday activities.

3. Discussion

Both time-use research and research on socio-ecological transformation and climate change provide new perspectives on questions of sustainable development and care. A focus on time use can help to (a) cross disciplinary boundaries for gender and sustainability studies, (b) provide analysis that goes beyond economic reduction, and (c) show the importance of care and climate justice for research on sustainable consumption.

(a) Time-use research provides a new perspective on gender differences (Druckman et al., 2012; Smetschka et al., 2019) across disciplines. The next step should be to analyze other social inequalities, such as age, employment status, or family size beyond but not ignoring the specific financial situation. In particular, the aging society faces new challenges. A higher amount of older people with ample leisure time and money available may result in a relatively high environmental impact. At the same time, the growing demand for caring for older people will change the time scarcity of persons responsible for caring. A growing part of society living as singles in urban areas will raise carbon emissions if not met with appropriate measures, such as smaller flats, better insulation, sharing of services, and amenities. Differences in household size

are important, as carbon footprints are lower when several persons share living space and amenities.

Time-use research can contribute to sustainability studies with new perspectives on degrowth, equality, and quality of life. Time-use patterns and changes therein can be analyzed as options for a low-carbon and energy society. For further analysis time-use data with relevant socioeconomic data (income) are necessary. Reliability and comparability of time-use data is an important issue discussed in the time-use research community. National commitments to regular surveys along the Harmonized European Time Use Survey (HETUS) Guidelines every 5 years, would be very important for further research.

(b) A perspective on human society and their carbon footprints beyond economic reduction and a perspective on environmental problems have to include all types of human activities. Time-use studies make caring activities visible as societal necessary work and enable discussion on everyday life and gender relations. Social inequality and everyday activities have an impact on society–nature interactions, which can be measured when linking human activities to energy or material use or carbon emissions, and therefore provide a link to research on socio-ecological transformation and the search for pathways to a climate-friendly society.

Functional time-use categories help to focus on action possible at different levels and pathways toward a low-carbon society. For a good quality of life, personal time should not be reduced in hours, but the environmental impact can be lower if less material and energy are required. If more caring time is necessary for an aging society or with less national welfare available, we have to find pathways to organize these tasks with as little environmental impact as possible. Work time reduction is widely discussed as having three dividends (Buhl and Acosta, 2016) of lower environmental footprints, higher life satisfaction, and more equal social distribution of work, but only if it translates to sharing work, time, and money among more persons. Leisure time is mostly discussed as consumption time. Adding a time perspective helps to discern other ways of spending long hours of free time with little environmental impact which mostly relate to caring and resonance: relaxing, meeting and caring for family and friends, engaging in community work, kissing, singing, and playing music.

(c) A perspective on care and climate justice is an important focus of sustainable consumption. Time to care can be important on many levels: Caring for one's own self, relatives and (expanded) household members, and societal issues needs time. Additionally, unpaid care work needs more visibility in order to be shared more equally. Reassessing unpaid reproductive care activities and other forms of (paid) work is the basis for solving some of the most urgent ecological and social problems (Biesecker and Hofmeister, 2006; Haug, 2008; Hofmeister and Mölders, 2021; Winker, 2021).

Acceleration (Rosa and Trejo-Mathys, 2013) and time pressure (Sullivan and Gershuny, 2018) are determinants of quality of life and of the climate impacts of everyday activities, especially in the area of unpaid care work and care (Shove et al., 2009; Schor, 2010). Time cultures, for example, the handling of speed and waiting times and the evaluation of the short or long life of products, are seen as important factors for sustainable resource use (Rau, 2015). They are at the same time important factors in care work and housework. Sufficient time is necessary to lead a healthy

life with recreation, exercise, and sport (Haas et al., 2018; Görg et al., 2023). Time wellbeing as an immaterial form of wellbeing contributes to more climate-friendly choices (Rinderspacher, 2002; Rosa et al., 2015; Großler et al., 2020). The climate impacts of care work surely have to be discussed further (Görg et al., 2023).

The quality of care work depends on interaction and thus on time. Structural constraints lead to a shortage of time or a lack of time sovereignty. Time scarcity often requires consumption with increased resource and energy consumption—as far as this is financially possible. In addition, higher incomes lead to higher demands, for example, in the household sector (kitchen equipment, higher hygiene standards, increasing wellness requirements). Climate-friendly time policy (Reisch and Bietz, 2014) and care-oriented time policy (Heitkötter et al., 2009) focus on time as a lever for policies and combine the two concerns: If people have more time disponible and care work is distributed more equitably (i.e., between genders and ages), they could act in a more climate-friendly way (Hartard et al., 2006; Schor, 2010; Rau, 2015).

The COVID-19 pandemic has brought a massive increase in unpaid work required in private households—mainly due to school and kindergarten closures (Farré et al., 2020; Fodor et al., 2021). Research on the impact on the carbon footprint is still largely lacking (Gerold and Geiger, 2020; Godin and Langlois, 2021). New services, such as delivery and online services, working conditions (home office), and offers of the sharing economy change the mix of unpaid/paid work and personal/outsourced labor in the care sector. How such changes affect the consumption of resources and the climate impact of care work has yet to be incorporated into existing concepts and research.

Further research analyzing differences in time use linked to caring responsibilities, income, location, and availability of infrastructure is crucial to assess possible pathways toward low-carbon everyday life. Time available for personal self-care, care for others, for society and nature is central for pathways toward a climate-friendly living. We found some literature lately (Godin and Langlois, 2021), but further research on the links between sustainable consumption, care work, and lifestyles is needed. The following research questions need to be investigated: What helps people to be able to spend an adequate amount of time with care work? How can a balance between committed time and other time categories lead to a high level of wellbeing? And how can a balance between committed time and other time categories lead to a low level of CO₂ emissions in everyday life?

A time perspective helps to analyze socio-ecological interactions and to redefine and expand the concept of work (Biesecker and Hofmeister, 2006; Biesecker et al., 2012). A re-evaluation of different forms of work, paid and unpaid, for the production and reproduction of a person, household, economy, and society leads to more gender justice. “If greater leeway in the use of time could be created through time prosperity, it would be conceivable that resource-intensive practices could be substituted with time-intensive ones in many lifeworlds” (Buhl et al., 2017). Freed-up capacities can be used for more care (Hofmeister and Mölders, 2021) and to build structures for a more just and climate-friendly life (Winker, 2021) and, thus, represent valuable co-benefits.

Here, we present a theoretical framework for conducting further research in the field of time, care, and gender studies toward sustainable development. How we spend our time matters, and not merely to our own wellbeing and the quality of life of our families and fellow human beings while caring for them. Actually, it is of essential importance to the ecological and social problems of our time.

Data availability statement

The original contributions presented in the study are included as references, further inquiries can be directed to the corresponding author.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Funding

This paper draws from several projects over the last years, including the Austrian Science Fund (FWF) project UTE (TRP214-G17), the European Research Council (ERC) project MAT_STOCKS (grant 741950), and the discussion for the ACRP project: Special Report: Strukturen für ein klimafreundliches Leben. The funding bodies did not have any influence on the arguments presented herein.

Acknowledgments

The authors would like to thank colleagues from the APCC Special Report (Görg et al., 2023) and the Team Social Ecology Vienna for productive discussions on linking care to climate research. The idea for the perspective article came up in a SCORAI workshop on Sustainable Consumption and Care and thanks go to the participants of this workshop.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

- Adam, B. (1997). "Time and the Environment," in *The International Handbook of Environmental Sociology* (Cheltenham, UK; Massachusetts, USA: Edward Elgar) p. 169–178. doi: 10.4337/9781843768593.00019
- Bader, C., Moser, S., Neubert, S. F., Hanbury, H. A., and Lannen, A. (2021). *Free Days for Future? Centre for Development and Environment*. Bern, Switzerland: University of Bern, Switzerland
- Bauhardt, C. (1995). *Stadtentwicklung und Verkehrspolitik: eine Analyse aus feministischer Sicht*. Basel Boston Berlin: Birkhäuser.
- Bauhardt, C. (2013). Wege aus der Krise? Green New Deal – Postwachstumsgesellschaft – Solidarische Ökonomie: Alternativen zur Wachstumsökonomie aus feministischer Sicht. *Gender*. 9–26. Available online at: <https://elibrary.utb.de/doi/pdf/10.3224/gender.v5i2.04>
- Biesecker, A., and Hofmeister, S. (2006). *Die Neuerfindung des Ökonomischen. Ein (re)produktionstheoretischer Beitrag zur Sozial-ökologischen Forschung*. München: oekom.
- Biesecker, A., and Hofmeister, S. (2010). (Re)productivity: sustainable relations both between society and nature and between the genders. *Ecol. Econ.* 69, 1703–1711. doi: 10.1016/j.ecolecon.2010.03.025
- Biesecker, A., Mathes, M., Schön, S., and Scurell, B. (2000). *Vorsorgendes Wirtschaften. Auf dem Weg zu einer Ökonomie des guten Lebens*. Bielefeld: Kleine Verlag.
- Biesecker, A., Wichterich, C., and v. Winterfeld, U. (2012). *Feministische Perspektiven zum Themenbereich Wachstum, Wohlstand, Lebensqualität*. Bremen, Bonn und Wuppertal. Available online at: <https://www.rosalux.de/publikation/id/6177/feministische-perspektiven-zum-themenbereich-wachstum-wohlstand-lebensqualitaet> (accessed May 4, 2023).
- Buhl, J., and Acosta, J. (2016). Work less, do less?: Working time reductions and rebound effects. *Sustain. Sci.* 11, 261–276. doi: 10.1007/s11625-015-0322-8
- Buhl, J., Schipperges, M., and Liedtke, C. (2017). "Die Ressourcenintensität der Zeit und ihre Bedeutung für nachhaltige Lebensstile," in *Verbraucherwissenschaften*, Kenning, P., Oehler, A., Reisch, A. L., and Grugel, C. (Wiesbaden: Springer Fachmedien Wiesbaden) p. 295–311. doi: 10.1007/978-3-658-10926-4_16
- Carlstein, T. (1981). *Time Resources, Society and Ecology: On the Capacity for Human Interaction in Space and Time*. London: Edward Arnold.
- Cohen, M., and MacGregor, S. (2020). *Towards a Feminist Green New Deal for the UK: A Paper For The Wbg Commission On A Gender-Equal Economy*. Women's Budget Group. Available online at: https://pure.manchester.ac.uk/ws/portalfiles/portal/170845257/Cohen_and_MacGregor_Feminist_Green_New_Deal_2020.pdf (accessed May 4, 2023).
- de Graaf, J. (2003). *Take Back Your Time. Fighting Overwork and Time Poverty in America*. San Francisco: Berret-Koehler.
- Dengler, C., and Lang, M. (2019). "Feminism Meets Degrowth. Sorgearbeit in einer Postwachstumsgesellschaft," in *Ökonomie des Versorgens. Feministisch-kritische Wirtschaftstheorien im deutschsprachigen Raum*. (Weinheim: Beltz Juventa) p. 305–330.
- Druckman, A., Buck, I., Hayward, B., and Jackson, T. (2012). Time, gender and carbon: A study of the carbon implications of British adults' use of time. *Ecol. Econ.* 84, 153–163. doi: 10.1016/j.ecolecon.2012.09.008
- Eurostat (2018). Quality of life indicators - measuring quality of life - Statistics Explained. Available online at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_indicators_-_measuring_quality_of_life (accessed August 2, 2018).
- Farré, L., Fawaz, Y., González, L., and Graves, J. (2020). *How the COVID-19 Lockdown Affected Gender Inequality in Paid and Unpaid Work in Spain*. IZA DP No. 13434. IZA Institute of Labor Economics. p. 1–36.
- Fischer-Kowalski, M., and Haas, W. (2016). "Toward a Socioecological Concept of Human Labor," in *Social Ecology. Society-Nature Relations across Time and Space Human-Environment Interactions*, Haberl, H., Fischer-Kowalski, M., Krausmann, F., and Winiwarter, V. (Cham: Springer International Publishing) p. 169–196. doi: 10.1007/978-3-319-33326-7_7
- Fischer-Kowalski, M., Haberl, H., Hüttler, W., Payer, H., Schandl, H., Winiwarter, V., et al. (1997). "Gesellschaftlicher Stoffwechsel und Kolonisierung von Natur," in *Ein Versuch in Sozialer Ökologie* (Amsterdam: Gordon & Breach Fakultas).
- Fischer-Kowalski, M., and Schaffartzik, A. (2008). "Arbeit, gesellschaftlicher Stoffwechsel und nachhaltige Entwicklung," in *Verwerfungen moderner Arbeit. Zum Formwandel des Produktiven*, ed. M. Füllsack (Bielefeld: transcript) 65–82. doi: 10.1515/9783839408742-003
- Fischer-Kowalski, M., and Weisz, H. (1999). Society as a Hybrid Between Material and Symbolic Realms. Toward a Theoretical Framework of Society-Nature Interaction. *Adv. Hum. Ecol.* 8, 215–251.
- Fodor, É., Gregor, A., Koltai, J., and Kováts, E. (2021). The impact of COVID-19 on the gender division of childcare work in Hungary. *Euro. Soc.* 23(sup1), S95–S110. doi: 10.1080/14616696.2020.1817522
- Garhammer, M. (2008). *Arbeitszeit, Zeitznutzung von Familien und Zeitpolitiken in Europa*. Nürnberg, Germany: Technische Hochschule Nürnberg Georg Simon Ohm. Available online at: <https://opus4.kobv.de/opus4-ohm/frontdoor/index/index/year/2008/docId/5> (accessed May 4, 2023).
- Gerold, S., and Geiger, S. (2020). *Arbeit, Zeitwohlstand und Nachhaltiger Konsum während der Corona-Pandemie*. Arbeitspapier des Fachgebiets Arbeitslehre/Ökonomie und Nachhaltiger Konsum Nr. 2, TU Berlin. Available online at: https://www.rezeitkon.de/wordpress/wp-content/uploads/2020/11/WP_Gerold_Geiger_Corona.pdf
- Gershuny, J. (2011). *Time-Use Surveys and the Measurement of National Well-Being*. Oxford: Centre for Time-use Research Oxford.
- Godin, L., and Langlois, J. (2021). Care, gender and change in the study of sustainable consumption: a critical review of the literature. *Front. Sustain.* 2, 725753. doi: 10.3389/frsus.2021.725753
- Görg, C., Madner, V., Muhar, A., Novy, A., Posch, A., Steininger, K. W., et al. (2023). *APCC Special Report: Strukturen für ein klimafreundliches Leben (APCC SR Klimafreundliches Leben)*. Berlin, Heidelberg: Springer Spektrum.
- Großer, E., von Jorck, G., Kludas, S., Mundt, I., and Sharp, H. (2020). Sozial-ökologische Infrastrukturen – Rahmenbedingungen für Zeitwohlstand und neue Formen von Arbeit. *Ökologisches Wirtschaften - Fachzeitschrift*. 4, 14–16. doi: 10.14512/OEW350414
- Haas, W., Moshhammer, H., Mutarak, R., Balas, M., Ekmekcioglu, C., Formayer, H., et al. (2018). *Health, Demography and Climate Change - Summary for Policymakers*. Austrian Panel on Climate Change (APCC), Wien: Österreichische Akademie der Wissenschaften.
- Haberl, H., Fischer-Kowalski, M., Krausmann, F., and Winiwarter, V. (2016). *Social Ecology. Society-Nature Relations across Time and Space*. Cham: Springer. doi: 10.1007/978-3-319-33326-7
- Haberl, H., Schmid, M., Haas, W., Wiedenhofer, D., Rau, H., and Winiwarter, V. (2021). Stocks, flows, services and practices: nexus approaches to sustainable social metabolism. *Ecol. Econ.* 182, 106949. doi: 10.1016/j.ecolecon.2021.106949
- Hartard, S., Schaffer, A., and Stahmer, C. (2006). *Die Halbtagsgesellschaft. Konkrete Utopie für eine zukunftsfähige Gesellschaft*. Baden-Baden: Nomos Verlag.
- Haug, F. (2008). *Die Vier-in-einem-Perspektive. Politik von Frauen für eine neue Linke*. Hamburg: Argument Verlag.
- Heitkötter, M. (2006). *Sind Zeitkonflikte des Alltags gestaltbar? Prozesse und Gegenstände lokaler Zeitpolitik am Beispiel des ZeitBüro-Ansatzes*. Frankfurt: Peter Lang Verlag.
- Heitkötter, M., Jurczyk, K., and Lange, A. (2009). *Zeit für Beziehungen? Zeit und Zeitpolitik für Familien*. Opladen: B. Budrich. doi: 10.2307/j.ctvd7w8p1
- Hofmeister, S., and Mölders, T. (2021). *Für Natur sorgen? Dilemmata feministischer Positionierungen zwischen Sorge- und Herrschaftsverhältnissen*. Opladen Berlin Toronto: Verlag Barbara Budrich. doi: 10.2307/j.ctv1jhvn5t
- Jackson, T. (2005). Live better by consuming less? Is there a "double dividend" in sustainable consumption? *J. Ind. Ecol.* 9, 19–36. doi: 10.1162/1088198054084734
- Jalas, M. (2002). A time use perspective on the materials intensity of consumption. *Ecol. Econ.* 41, 109–123. doi: 10.1016/S0921-8009(02)00018-6
- Kasser, T., and Sheldon, K. M. (2010). Time affluence as a path toward personal happiness and ethical business practice: empirical evidence from four studies. *J. Bus. Ethics.* 84, 243–255. doi: 10.1007/s10551-008-9696-1
- Knobloch, U. (2019). *Ökonomie des Versorgens: feministisch-kritische Wirtschaftstheorien im deutschsprachigen Raum. 1. Auflage*. Weinheim: Beltz Juventa.
- Kränzl Nagel, R., and Beham, M. (2007). *Zeitnot oder Zeitwohlstand in Österreichs Familien? Einfluss familialer Faktoren auf den Schulerfolg von Kindern*. Wien: European Centre for Social Welfare Policy and Research. Available online at: <https://www.euro-centre.org/publications/detail/358> (accessed May 4, 2023).
- Kuhl, M., Maier, F., and Mill, H. T. (2011). *The gender dimensions of the green new deal—A study commissioned by the Greens/EFA*. Available online at: <https://www.greens-efa.eu/en/article/document/the-gender-dimensions-of-the-green-new-deal> (accessed December 20, 2021).
- Littig, B. (2002). The case for gender-sensitive socio-ecological research. *Work Employ. Soc.* 16, 111–132. doi: 10.1177/09500170222119272
- Madörin, M. (2010). "Care Ökonomie – eine Herausforderung für die Wirtschaftswissenschaften," in *Gender and Economics*, Bauhardt, C., and Çağlar, G. (Wiesbaden: VS Verlag für Sozialwissenschaften) p. 81–104. doi: 10.1007/978-3-531-92347-5_4

- Minx, J., and Baiocchi, G. (2010). "Time Use and Sustainability: An Input-Output Approach in Mixed Units," in *Handbook on Input-Output Economics in Industrial Ecology*, Suh, S. (Berlin, Heidelberg, New York: Springer) p. 819–846. doi: 10.1007/978-1-4020-5737-3_37
- Mischau, A., and Oechsle, M. (2005). *Arbeitszeit - Familienzeit - Lebenszeit: Verlieren wir an Balance?*. Wiesbaden: Vs Verlag.
- Moe, K. S. (1998). Fertility, time use, and economic development. *Rev. Econ. Dyn.* 1, 699–718. doi: 10.1006/redy.1998.0022
- Mückenberger, U., and Boulin, J. Y. (2005). *Times in the City and Quality of Life*. Dublin: European Foundation for the Improvement of Living and working Conditions.
- Plank, C., Liehr, S., Hummel, D., Wiedenhofer, D., Haberl, H., and Görg, C. (2021). Doing more with less: Provisioning systems and the transformation of the stock-flow-service nexus. *Ecol. Econ.* 187, 107093. doi: 10.1016/j.ecolecon.2021.107093
- Rau, H. (2015). "Time use and resource consumption," in *International Encyclopedia of the Social and Behavioural Sciences Ecological and Environmental Sciences*. (Oxford: Elsevier). doi: 10.1016/B978-0-08-097086-8.91090-0
- Reisch, L. (2015). *Time Policies for a Sustainable Society*. Cham: Springer International Publishing. doi: 10.1007/978-3-319-15198-4
- Reisch, L. A., and Bietz, S. (2014). *Zeit für Nachhaltigkeit - Zeiten der Transformation: mit Zeitpolitik gesellschaftliche Veränderungsprozesse steuern*. München: oekom.
- Rinderspacher, J. (2002). *Zeitwohlstand. Ein Konzept für einen anderen Wohlstand der Nation*. Berlin: Edition sigma.
- Ringhofer, L., and Fischer-Kowalski, M. (2016). "Method Précis: Functional Time Use Analysis," in *Social Ecology. Society-Nature Relations across Time and Space Human-Environment Interactions*, Haberl, H., Fischer-Kowalski, M., Krausmann, F., and Winiwarter, V. (eds). (Cham: Springer International Publishing) p.519–522.
- Rosa, H., Paech, N., Habermann, F., Haug, F., Wittmann, F., Kirschenmann, L., et al. eds. (2015). *Zeitwohlstand: wie wir anders arbeiten, nachhaltig wirtschaften und besser leben*. 2. Auflage. München: Oekom Verlag.
- Rosa, H., and Trejo-Mathys, J. (2013). *Social Acceleration: A New Theory of Modernity*. New York: Columbia University Press. doi: 10.7312/rosa14834
- Rulffes, E. (2021). *Die Erfindung der Hausfrau: Geschichte einer Entwertung*. 1. Auflage, Originalausgabe. Hamburg: HarperCollins.
- Sanne, C. (2002). Willing consumers- or locked-in? Policies for a sustainable consumption. *Ecol. Econ.* 42, 273–287. doi: 10.1016/S0921-8009(02)00086-1
- Schaffer, A. (2007). Women's and men's contributions to satisfying consumers' needs: a combined time use and input-output analysis. *Econ. Syst. Res.* 19, 23–36. doi: 10.1080/09535310601164732
- Schalatek, L. (2012). "Gender und Klimafinanzierung: Doppeltes Mainstreaming für Nachhaltige Entwicklung," in *Geschlecht - Macht - Klima. Feministische Perspektiven auf Klima, gesellschaftliche Naturverhältnisse und Gerechtigkeit Politik und Geschlecht*, Çağlar, G., do Mar Castro Varela, M., and Schwenk, H. (eds). (Opladen, Berlin and Toronto: Barbara Budrich) 137–167. doi: 10.2307/j.ctvdf02jx.10
- Schor, J. B. (2000). "Working hours and time pressure: The controversy about trends in time use," in *Working Time: International Trends, Theory and Policy Perspectives*, eds D. M. Figart and L. Golden (Routledge). doi: 10.4324/9780203183441
- Schor, J. B. (2010). *Plenitude: The New Economics of True Wealth*. New York: Penguin Press.
- Shove, E., Trentmann, F., and Wilk, R. R. (2009). *Time, Consumption and Everyday Life: Practice, Materiality and Culture*. Oxford; New York: Berg. doi: 10.5040/9781474215862
- Smetschka, B., Wiedenhofer, D., Egger, C., Haselsteiner, E., Moran, D., and Gaube, V. (2019). Time matters: the carbon footprint of everyday activities in Austria. *Ecol. Econ.* 164, 106357. doi: 10.1016/j.ecolecon.2019.106357
- Spitzner, M., and Hofmeister, S. (1999). *Zeitlandschaften: Perspektiven öko-sozialer Zeitpolitik*. Stuttgart: Hirzel.
- Sullivan, O. (1997). Time waits for No (Wo)man: an investigation of the gendered experience of domestic time. *Sociology.* 31, 221–240. doi: 10.1177/0038038597031002003
- Sullivan, O., and Gershuny, J. (2018). Speed-up society? Evidence from the UK 2000 and 2015 time use diary surveys. *Sociology.* 52, 20–38. doi: 10.1177/0038038517712914
- Werlhof, C., Mies, M., and Bennholdt-Thomsen, V. (1988). *Frauen, die letzte Kolonie: zur Hausfrausierung der Arbeit*. Reinbek: Rowohlt.
- Wiedenhofer, D., Smetschka, B., Akenji, L., Jalas, M., and Haberl, H. (2018). Household time use, carbon footprints, and urban form: a review of the potential contributions of everyday living to the 1.5°C climate target. *Curr. Opin. Environ. Sustain.* 30, 7–17. doi: 10.1016/j.cosust.2018.02.007
- Winker, G. (2021). "Solidarische Care-Ökonomie," in *Revolutionäre Realpolitik für Care und Klima*. Bielefeld: Transcript. doi: 10.1515/9783839454633