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Money, Vouchers, Public Infrastructures? A Framework for Sustainable Welfare Benefits

Katharina Bohnenberger

Institute for Socio-Economics, University of Duisburg-Essen, Lotharstr. 65, 47057 Duisburg, Germany;
katharina.bohnenberger@uni-due.de

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Abstract: While the social consequences of environmental policies are extensively evaluated in sustainability research, few studies exist on the ecological impact of social benefits and the welfare state. Sustainable welfare is a novel research field that seeks to close this knowledge gap and develop integrated eco-social policies. Within this, researchers are starting to ask how citizen's needs can be guaranteed in an environmentally sustainable way and how their welfare benefits should be delivered. Should citizens receive a universal basic income, be given vouchers for ecologically beneficial or socially needed goods and services, or be provided with access to socio-ecological infrastructures and services? This article develops a framework for sustainable welfare benefits with six criteria of sustainable welfare and nine different types of welfare benefits that belong to the domains of universal basic income (UBI), universal basic services (UBS), and universal basic vouchers (UBV). Using this framework, existing policy proposals are categorized and evaluated. The advantages and disadvantages of the different types of welfare benefits are discussed and new application areas highlighted. The analysis shows that a successful policy will likely include all forms of welfare benefits, with certain types being more adequate for certain fields and societal circumstances. The framework for sustainable welfare benefits can serve as a starting point for further research on integrated policy design and inform policymakers on the selection of eco-social policies.

Keywords: basic income; basic services; degrowth; eco-social policies; post-growth; social policy; socio-ecological infrastructures; sustainable welfare; vouchers; welfare state

1. Introduction

Today's society is asking for a "just transition" towards ecological sustainability. However, the scientific quest for solutions that respect environmental limits and further human wellbeing has just begun. While the social consequences of environmental policies are already comprehensively evaluated in sustainability research, little research exists on the environmental impacts of social policies. Even more, a debate on the ecological sustainability of social policies is all but absent in social welfare research. Similarly, the role of social policy and the respective design of the welfare state is often only a side note in the literature on environmental sustainability. Sustainable welfare is a novel and interdisciplinary research field that seeks to close this knowledge gap and develop integrated eco-social policies (e.g., [1–6]).

Broadly speaking, countries today either perform well in meeting social needs or respecting environmental thresholds and no country performs well enough on both indicators to be seen as a role model for sustainable welfare [7]. The relationship between the welfare state and the environment is complex. On a conceptual level, both social and environmental policies reduce the externalization of social costs and overexploitation of human and ecological resources [8]. Welfare states shape societal provisioning systems and welfare regimes are said to differ in their ability to incorporate environmental goals [9,10]. Indeed different clusters of eco-social states have been identified, although a systematic

relationship has not yet been found with welfare state regime types [11,12]. At the same time, welfare states directly contribute to resource consumption through their expenditure on social policy, which forms a significant portion of most state budgets. For Finland for example, Ottelin et al. find that the share of public services and investments is 19% of the carbon footprint and 38% of the material footprint per capita [13]. This relationship also implies that greening the welfare state is key leverage for reaching social and environmental goals. Thus, the type of social policy, like income taxation and legal regulation, as well as the way in which states provide welfare benefits has implications for environmental performance [14].

This article focuses on the expenditure side of the welfare state and asks how the design of welfare benefits contributes to sustainable welfare. So far, welfare benefits have been analyzed from a budgetary perspective (what is the most cost-efficient way of delivering welfare benefits?), from a distributional perspective (who benefits most from different forms of welfare benefits?), from a social target perspective (can certain welfare benefits reach goals like reduced poverty?) [15], but the environmental implications of different distribution schemes have not been compared. However, proponents of basic income have argued for the ecological benefits of a universal basic income (UBI) [16]. Recently, universal basic services (UBS) have been advocated as an alternative to universal basic income and a similar emphasis on environmental co-benefits [17–19].

A third alternative is vouchers, which take a middle position between money (UBI) and public infrastructures (UBS) [15]. In this article, I define a set of different types of vouchers as universal basic vouchers (UBV) and consider them in comparison to UBI and UBS. Vouchers themselves are a rather under-researched topic: “The overall paucity of research regarding voucher policies for social gain suggests a significant gap in the literature. This gap may exist because such a policy fits neither of the narratives that drive the majority of sociological and economic policy literatures” [20]. To my knowledge, up to now, there exists no research that covers ecological considerations of vouchers. Therefore, one must wonder which forms of welfare benefits actually best comply with sustainable welfare: Money, vouchers, or public infrastructures? Research cannot provide a final decision to this question, because the answer will always depend on the temporal and spatial scope of the welfare system under consideration.

Instead, this paper provides an analytical framework for sustainable welfare benefits (Section 2), which can be used to evaluate different types of welfare benefits according to sustainable welfare. The framework is created by tabulating sustainable welfare criteria as they are put forward in the literature (Section 2.1), and a typology of welfare benefits that is developed using a deductive method based on the characteristics of the goods and services that welfare benefits provide (Section 2.2). Afterwards (Section 3), the article discusses advantages and disadvantages of the different benefit types and reports the proposals and arguments that are made with respect to the sustainable welfare criteria. Furthermore, new application areas are highlighted and conclusions about conditions for suitable application drawn. Theoretically, the findings can be relevant for all countries striving towards human flourishing. Yet, since the arguments are based on existing literature and most of the research is restricted to established welfare states, the findings will be most applicable in this context.

2. Framework for Sustainable Welfare Benefits

This section establishes the framework for sustainable welfare benefits. Frameworks are useful tools for unravelling complex relationships and bringing structure in seemingly unsorted collections of arguments and fragments. They also systematize knowledge and provide a map of findings, which uncover research gaps. Thus, a framework is particularly applicable for a new research field such as sustainable welfare benefits.

After specifying the criteria against which welfare benefits should be evaluated (Section 2.1), different welfare benefits are portrayed (Section 2.2). The sustainable welfare criteria are developed using an inductive approach, which synthesizes the characteristics of sustainable welfare. The typology of welfare benefits is derived deductively from an analysis of the structural difference between welfare

benefits. Together, the two dimensions establish the framework for sustainable welfare benefits, which is then used to systematize and evaluate existing proposals (Section 3). Table 2 summarizes the framework for sustainable welfare benefits.

2.1. Criteria of Sustainable Welfare

The concept of sustainable welfare originates from the argument that welfare states can contribute to meeting environmental goals by not only softening social consequences of transitions towards carbon neutrality and other ecological endeavors, but also by shaping welfare systems themselves and thereby enabling a good life within planetary boundaries [7]. There is a growing body of literature in the field of sustainable welfare, with several main works dealing with the topic on a conceptual level (e.g., [1–6]). Six main characteristics of sustainable welfare can be found in this literature and are presented as follows.

2.1.1. Guarantee of Need Satisfaction

Needs and the adequate meeting of them lie at the heart of social policy and sustainable welfare. Global social policy has always had a clear focus on basic human needs, like avoiding poverty, adequate food, and drinking water provision. This is visible in the sustainable development goals (SDGs) and even the Brundtland report has made the centrality of needs explicit: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [21]. Philosophically, this approach is grounded in the concept of sufficientarianism [22–26], which states that we have particular duties to satisfy others’ basic needs. Several scholars hold the position that, as a criterion of justice, the concept of human needs is superior to other concepts such as subjective preferences [27–29]. Contrary to wants, needs are universal across cultures and generations, are non-substitutable, and are satiable [30,31]. This allows the formulation of social goals that respect ecological carrying capacities and whose achievement enables a good life within the idea of “enough”. Defining needs is, hence, a precondition for operating economies “in the safe and just space of humanity” [32]. Needs must be distinguished from need-satisfiers, which are defined as the means with which to satisfy needs [28]. Whilst needs, such as food, water, housing, and physical security are universal, need satisfiers (e.g., diets) vary by cultural circumstances and characteristics of the person. Through different need-satisfiers, needs are linked to material footprints [33]. Thus, a key conclusion for the framework for sustainable welfare benefits is that a certain package of need satisfiers is necessary for the avoidance of harm [17].

2.1.2. Support of Social Inclusion

Welfare benefits can also contribute to social inclusion. While needs are independent of the affluence levels of other members of society, social inclusion is lower when there are greater inequalities in the living standards of members in a society. The distinction between needs and social inclusion is also visible in the distinction between absolute poverty (needs) and relative poverty (inclusion). Social inclusion is furthered by promoting income equality, ensuring political and social participation, community-building, and avoiding stigmatization (e.g., [17,34–37]). While traditional theories of justice have dealt with distributional questions in abstract (monetary) terms by questioning excess income and wealth, ‘ecological-resources-limitarianism’ argues for maximum consumption of natural resources [38]. A meta-study on articles of degrowth and post-growth detects redistribution of income and wealth both within and between countries as a key goal within the research field [34]. For this reason, several researchers have made proposals for not only minimum income, which addresses needs, but also maximum income, which limits inequality and promotes social inclusion [39–41]. Yet, low levels of conspicuous consumption and income and wealth equality are particularly relevant for similar consumption levels. Here, the goal of social inclusion is in line with concepts like consumption corridors [42]. Another strategy for social inclusion consists in limiting the spheres in which economic inequality matters. This could be achieved through decommodification, and by placing restrictions on

the way individuals can spend their money [43]. For example, fields such as education and health, where expenditures lead to differences in the equality-of-opportunity of people, could be excluded from market provisioning. The design of welfare benefits, and whether goods and services are freely available or restricted via money or entitlements (like vouchers), has major implications for de-facto distribution [15].

2.1.3. Respect of Ecological Limits

Sustainable welfare benefits have to guarantee lower limits of social goals but they must also be compatible with upper limits of environmental resource use [32]. This includes environmental goals like the 1.5 °C target adopted in the Paris Agreement, and limitations on resources or sinks for other planetary boundaries [44]. A necessary condition is the general avoidance of overuse of a resource or a sink [34], but even a reduction of environmental impacts within certain sectors (e.g., transportation) can have positive implications. Although rebound effects might cancel out some of these advantages (e.g., [45]), the net effect of respective policies will still be positive if they lower the energy and resource intensity of income and time spent. In the field of climate change, technological supply-side solutions have dominated, but recently, climate scientists have started to highlight demand-side solutions [46]. Reasons for that are the urgency of greenhouse gas reductions [47] and the lack of absolute and sufficient decoupling of economic growth and environmental damages [48]. With their usually large share in state expenditures, social policies have high leverage on the level of carbon emissions and other environmental indicators. Welfare state regulations and benefit systems shape everyday practices and are hence responsible for enabling carbon-light lifestyles or reinforcing unsustainable practices. Welfare states determine the income and wealth distribution, which can positively influence environmental outcomes through reduced emissions-intensive status-consumption or negatively through potentially higher resource intensity of income spent by poorer households. The public provisioning systems of the welfare state can help to overcome lock-in emissions and reduce luxury emissions [2] and might even be more suitable than markets because they can coordinate sustainable practices such as active travel and local food procurement [17,18]. Hence, one challenge of sustainable welfare states consists of respecting both lower and upper limits of “enough”: Providing everyone with “the necessary” while at the same time avoiding overconsumption and setting the incentives for reducing the material impact of “the necessary”.

2.1.4. Freedom in Determining Own Lifestyle

In addition, welfare benefits are evaluated according to the possibilities they give citizens to determine their own conception of the good life and choose their desired lifestyles. Welfare benefits are supposed to protect the privacy of benefit recipients and respect their autonomy. For the assessment of welfare benefits, it matters whether benefits are given instead of or on top of existing benefits. Some forms of welfare benefits, especially in-kind benefits and vouchers, have been criticized as paternalistic because they nudge people’s behavior or because they leave less choice about the acquired goods and services than cash benefits [49,50]. Yet, “free consumer choice” or market autonomy is only one aspect that determines the possibility of autonomously choosing lifestyles. Freedom from coercion to market participation (as an employee or consumer) could also be an element of freedom, just like other factors e.g., time and information constraints might pose restrictions on the chance of transforming hypothetical possibilities into real choices. Furthermore, in times of climate change, welfare benefits not only influence the freedom of the recipients themselves, but also of others, as the embodied emissions of welfare benefits have indirect climate change impacts on the living conditions of people elsewhere. Hence, while “free consumer choices” might increase the market autonomy of the recipient, they might also limit the freedom of the ones affected by the negative externalities of the goods and services acquired through these benefits. The relationship between freedom and benefit types is thus much more nuanced than it seems at first sight. The evaluation of welfare benefits along this criterium will

not only depend on the preferences of the recipients and the implications for third-persons, but also on the presumed definition of either negative or positive freedom [51].

2.1.5. Economic Viability and Growth Independence

Welfare benefits must also be economically viable in all time periods. In the short term, increasing efficiency is the dominant strategy for this [15], which consists of productive efficiency (how much good or service is provided for a set welfare expenditure?), allocative efficiency (do target groups and actual recipients match?), and transaction cost (how much effort and bureaucracy is involved in distributing the benefits?) [15]. Since welfare states do not face the same constraints as households and can rely on sovereign debt for new welfare expenditures, there are technically no financial limits to welfare expenditure. Nonetheless, political circumstances might limit the accepted debt and tax levels. Obviously, also the design and extension of welfare benefits influence the political acceptance of the welfare state. Growing economies have made it easier for the welfare state to tackle national social problems without raising the question of (re-)distribution and equality [52]. However, in the long run, economic viability of welfare states also demands the independence of welfare states from economic growth. Currently, there seems to be a social and political necessity for constant economic growth [53], which is particularly pronounced for the welfare state [54]. Yet, research also shows that constant economic growth is incompatible with ecological limits [55]. When taking ecological limits as a criterium of sustainable welfare for granted, this implies that welfare states must learn to adapt to a post-growth situation and attenuate their dependence on economic growth [54,56,57]. The strategy of “preventive social policy” has been highlighted for this purpose [17,58].

2.1.6. Transformation Incentives

Last but not least, sustainable welfare benefits must be transformative, promoting sustainable lifestyles and supporting the socio-economic conditions for profound change to stay within environmental limits. While the former five criteria are time-independent and their essence does not vary for different cultures and regions, transformativeness is defined as the directed change between two conditions. How transformative incentives of sustainable welfare look will consequently depend on temporal, economic, technological, and cultural circumstances, on the characteristics of the welfare field, and the situation at hand. With green growth strategies so far having proven insufficient to succeed in the necessary reduction of negative environmental impacts [48], it is increasingly acknowledged that a Degrowth strategy is adequate and necessary for Western countries. In the past, welfare benefits haven been setting incentives, e.g., as activating or welfare-to-work policies. The prominence of employment for sustainable welfare is likely to shrink, therefore activation for employment will likely be replaced by incentives for sustainable lifestyles, which can entail strategies like sustainable work [59], post-productivism [60,61], decommodification, re-regionalization, eco-localization [35], conviviality, a relational paradigm-shift [39], and non-materialistic visions of the “Good Life” [34]. The majority of degrowth proposals are national top-down approaches, focusing on government as a major driver of change, but transformative policies might also empower local bottom-up approaches [34].

2.2. A Typology of Welfare Benefits

Researchers have highlighted the relevance of provisioning systems for both environmental sustainability and social goals [17]. O'Neill et al., for example, state, that “a better understanding of how different provisioning systems mediate the relationship between biophysical resource use and social outcomes will lead to new insights into how to reduce resource use while improving human well-being” [7]. The welfare state is part of the provisioning system. Its social policy influences citizens' wellbeing in multiple ways, for example through taxes (e.g., wealth and income taxes) and legal regulations (e.g., workers' rights), but its most important tools are welfare benefits. Welfare benefits belong to one of the three classes of welfare benefits: Universal basic income (UBI), universal basic vouchers (UBV), or universal basic services (UBS). The three take different positions on the

continuum of in-cash and in-kind benefits, with vouchers holding a middle position between the two others. The three types mirror different appearances for the recipient (UBI: Money, UBV: Paper or electronic vouchers, UBS: Infrastructures and services provided by these). Next to that, the differences between the three types can also be distinguished by considering the triangular exchange relationship between the benefit issuer (usually the state or other welfare institutions), the benefit recipient (usually citizens), and the benefit provider (e.g., doctor, food retail, sports clubs). Figure 1 illustrates these exchange relationships for the three classes of welfare benefits. The different exchange relationships have implications for the functioning of the benefit provision and hence for the fulfilment of the sustainable welfare criteria.

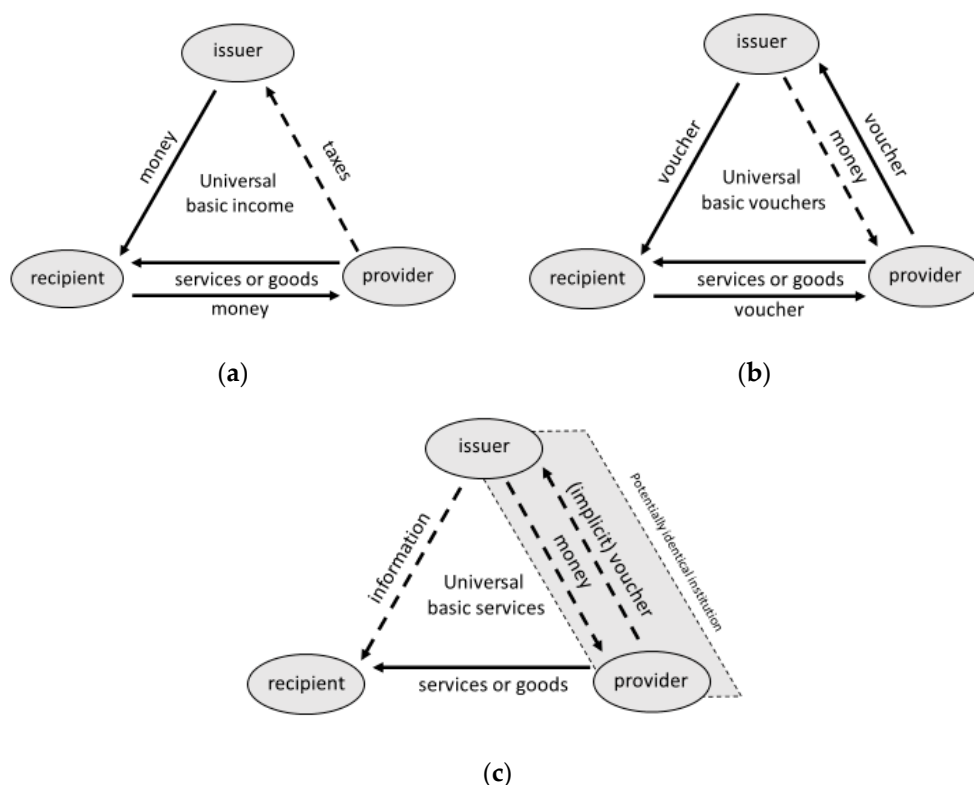


Figure 1. Exchange relationships between benefit recipient, benefit provider, and benefit issuer for the three classes of welfare benefits universal basic income (UBI) (a), universal basic vouchers (UBV) (b), universal basic services (UBS) (c). Continuous lines refer to the necessary relationships, dashed lines refer to relationships that are likely occurring. Figure based on illustrations for vouchers [62] and adapted for income benefits (UBI) and services (UBS). For a description see Appendix A.

Two categories suffice to distinguish the three benefit classes (see Table 1). While UBI and UBV provide information on the persons who receive the benefit, no knowledge is available on individual users of UBS. Ex-post evaluation could provide information on who utilized UBS, and certain types of infrastructures can only be accessed by a certain group of people (e.g., youth centers can only be visited by adolescents), yet the exact recipient cannot a-priori be targeted. UBI, on the other hand, provides no information about the type of goods or services that are acquired through that cash. This distinguishes them from UBV and UBS, which define the kind of goods and services that can be accessed. While UBS feature the highest information on properties of the benefit, vouchers can also be designed such that they are deployable for many different goods and services, resembling money-like benefits as UBI. Indeed, some even interpret certain forms of vouchers as a complementary currency [63]. Within the three classes UBI, UBV, and UBS welfare benefits can be designed in very different ways (see Appendix B). The design categories cover the type of benefit provided (Table A1: Categories 1–5), the temporal, spatial, and participant coverage (Table A1: Categories 6–11), and the circumstance

of implementation (Table A1: Categories 12–15). The categories take into account dimensions that are listed in research on voucher design (e.g., [15,64]), but extend beyond the design categories to be able to describe also the benefits types of UBI and UBS. For each category, several design options are possible. The differences between UBI, UBV, and UBS are for some design characteristics only gradual. For example, “one can think of cash as being simply a voucher, one with few constraints on fungibility” [43]. Much of the general critique of vouchers draws on the critique of one specific design option (e.g., the fungibility of the voucher allowing a parallel market to emerge). Thus, for the evaluation of a welfare benefit the exact design matters, for example if the voucher is not transferable (9a), can be transferred to another person (9b) or institution (9c), or is even freely tradable (9d).

Theoretically, a very large number of social benefit types result from the different combinations of these categories. However, such a large number does not allow for systematic comparison of welfare benefits. Therefore, a selection of useful combinations of characteristics must be made. The refinement can be obtained by focusing on the distinction between different recipients (for UBI and UBV systems) and different goods/services (for UBS and UBV). Seeking to construct an encompassing but also a concise typology results into nine welfare benefit types (see Table 1):

- UBI consists of two types, *transition income* with restricted recipient eligibility and *unconditional basic income* for everyone.
- Four types of welfare benefits can be distinguished for UBV along with different types of goods/services and for different target groups. *Quasi-currency vouchers* can be introduced to govern common-pool resources by rationing or restricting the right to use the resource. *Commons-innovation vouchers* are distributed to allow the emergence of new socio-ecological institutions and are hence applicable for club goods. There are no restrictions about to whom the vouchers are allocated. Finally, the distribution and use of private goods can also be managed through vouchers: *Needs vouchers* can be issued with a focus on a specific target group, to guarantee access to a certain amount of basic goods or services at given market prices. *Shift vouchers* are issued with emphasis on transforming the goods and services used.
- Three types are to be distinguished for UBS. These result from the classical Theory of Public Goods that systemizes goods along the dimensions “rivalry” (or “subtractability of use”) and “excludability” [65] and results in four categories: Public goods (no rivalry + no excludability), private goods (rivalry + excludability), club goods (no rivalry + excludability), and common-pool goods (rivalry + no excludability). For details on common-pool resources see Appendix C. Private goods, public goods, and club goods match different welfare benefits: State services, free consumption goods, public infrastructure.

Together with the criteria of sustainable welfare (outlined in Section 2.1), this typology of welfare benefits establishes the framework for sustainable welfare benefits. Table 1 also states a few examples of the nine different welfare benefit types. This raises the question of when to use which welfare benefit for optimal compliance with the criteria of sustainable welfare. The following section portrays the welfare benefit types and describes their characteristics. The evaluation of advantages and risks of the welfare benefits against the background of the aforementioned criteria allows a conclusion on suitable application cases to be drawn.

Table 1. Typology of welfare benefits. Bold shortcuts of the design principles refer to highly characteristic properties, normal style of shortcuts to possible design categories.

Welfare Benefit Type	Universal Basic Income		Universal Basic Vouchers				Universal Basic Services		
	Unconditional Basic Income	Transition Income	Shift Vouchers	Quasi-Currency Vouchers	Needs Vouchers	Commons-Innovation Vouchers	State Services	Free Consumption Goods	Public Infrastructure
Description	Money that is provided independent of the activity or circumstances of the recipient.	Money that is given to citizens affected by or contributing to sustainability transitions as a replacement for a market income.	Vouchers issued to incentivize a green behaviour shift through better information and price change.	Vouchers that are allocated to recipients to restrict and organize usage of a scarce good.	Vouchers given to people with the goal of ensuring their needs are met.	Vouchers issued to enable the emergence of commons and innovations.	Services a person can enjoy without charge when she/he or society considers it necessary.	Goods provided that can be used unlimitedly by people.	Institutions and public goods that are established or maintained and can be accessed by everyone.
Recipient (ex-ante)	known	known	known	known	known	known	unknown	unknown	unknown
Target recipient	everyone	selected groups	luxury emissions, (lock-in emissions)	everyone	low-income and lock-in emissions	everyone or selected group	-	-	-
Good or service (ex-ante)	unknown	unknown	known	known	known	known	known	known	known
Target goods or service	-	-	Private goods	Common-pool resources	Private goods	Club goods	Club goods	Private goods	Public goods
Design principles (see Appendix B)	1abcd, 2d, 3b, 4a, 5a, 6a, 7(b)cd, 8a, 9d, 10ac, 11abcde, 12a, 13c, 14d, 15a	1abcd, 2d, 3b, 4a, 5a, 6bc, 7(b)cd, 8b, 9d, 10abcd, 11abcde, 12a, 13c, 14cd, 15ab	1abcd, 2abc,3ab, 4abc, 5abc, 6c, 7a, 8abd, 9a, 10ab, 11abcd, 12a, 13c, 14d, 15ab	1ad, 2b, 3a, 4b, 5a, 6a, 7abcd, 8a, 9d, 10a, 11abcde, 12a, 13a, 14c, 15a,	1abcd, 2ab, 3ac, 4b, 5ab, 6abc, 7ad, 8abc, 9ab, 10ab,11bcd, 12a, 13c, 14bd, 15a	1abcd, 2c, 3ab, 4b, 5a, 6abc, 7abc, 8abcd, 9abc, 10abc, 11cde, 12ab, 13ab, 14a, 15a	1b, 2b, 3c, 4b, 5ac, 6abc, 7e, 8abc, 9a, 10abc, 11abcd, 12b, 13ab, 14abc, 15a	1a, 2bc, 3ab, 4b, 5a, 6abc, 7ae, 8abcd, 9a, 10abcd, 11abcde, 12bc, 13a, 14abc, 15a	1c, 2c, 3ab, 4b, 5a, 6abc, 7ae, 8a, 9a, 10abcd, 11abcde, 12c, 13a, 14abc, 15a
Examples	Universal basic income, guaranteed child allowance	Ecological Transition Income, job guarantee, Green Civil Service, Brazilian Bolsa Verde Programme	Ecological leave for sustainable behaviour, Repair vouchers, regional food, Sport vouchers, Personal service vouchers	Personal carbon allowance, housing space vouchers	Public transport vouchers, electricity vouchers, Vouchers for solar-panels, vouchers for green and healthy food	Night-train and bike-sharing vouchers, time banks, collaboration vouchers, regional currencies	Health care, education, child and elderly care, free local transport, repair services	Free internet, free tap water, school meals	Parks, forests, Bike lanes, vehicle-pooling benches, community spaces, Repair Cafés Transition houses

3. Comparison of Policy Proposals within the Framework for Sustainable Welfare Benefits

There is a lively debate on whether universal basic income (UBI) or universal basic services (UBS) are to be preferred as concerns sustainable welfare (e.g., [17]). However, the idea of vouchers has neither in academia nor in policy advice been explicitly discussed as a third alternative to this alleged dichotomy. Interestingly the idea of vouchers is by both defendants attributed to the “other” camp. For the “infrastructure camp” UK’s Labour Party, for example, states: “It is true that an entitlement to a “national minimum” for a particular good or service could, in principle, be guaranteed through a cash benefit (or voucher or insurance system) rather than through direct state provision” [19]. While for the “basic income camp” Howard et al. state: “Opponents of a Basic Income sometimes propose in-kind transfers (such as food or education vouchers, or the free usage of public services) as an alternative . . . [66]. Thus, vouchers form an interesting middle ground between UBI and UBS that could meet the desires of both camps. Finally, a sustainable welfare system will likely hold shares of all three classes of welfare benefits. A successful strategy for sustainable welfare might also combine several of these instruments [66,67]. MacNeill and Vibert, for example, propose “Complements to Basic Income” for incorporating ecological aspects into basic income [63] and others have proposed vouchers to be an element of basic income schemes [68]. After all, this cannot mean that all benefits are provided to their full extent and at the same time in addition to each other. Gough, for example, argues that universal basic income schemes (UBI) cannot be provided on top of universal basic services (UBS): “Of course this leaves open the question, why not advocate both UBI and UBS? . . . A universal unconditional living income would require punitive levels of taxation. By focussing wholly on individual income, UBI would threaten public provision of collective consumption . . . ” [17].

One concept that comes closest to this approach is the Unconditional Autonomy Allowance (UAA) [69]. The proposal highlights areas like nutrition, clothing, and housing space, but only develops quantities of these amounts and it provides only little indication in which form they should be provided. The proposal states that different types of welfare benefits are desired, but it does not conclude when to use income, vouchers, or public infrastructure.

This section presents the arguments for and against the nine different types of welfare benefits. The visual interpretation of the summary of the results (Table 2) shows that there is no systematic trade-off or relationship between social and environmental goals when selecting welfare benefits. Subject to the circumstance of implementation, the spatial, and territorial case, different welfare benefits could be suitable. In many cases, this will result in a policy mix of universal basic income, universal basic vouchers, and universal basic services.

Table 2. Comparison of policy proposals within the framework for sustainable welfare benefits. Colors indicate the fulfilment of the criteria. Green = highly positive impact on the criteria, yellow = mixed (positive but also some negative) impact, red = no positive, or even negative impact.

Sustainable Welfare Criteria	Universal Basic Income			Universal Basic Vouchers			Universal Basic Services		
	Unconditional Basic Income	Transition Income	Shift Vouchers	Quasi-Currency Vouchers	Needs Vouchers	Commons-Innovation Vouchers	State Services	Free Consumption Goods	Public Infrastructures
1. Guarantee of needs satisfaction	(+) includes money for new needs (+) different (amount of) need satisfier (− price fluctuations (−) expensive needs	(−) needs satisfaction not at the center (+) part of a larger insurance system against climate-related risks	(−) need satisfaction is not at the center (+) side-benefit: overcoming poverty through lock-in emissions a	(+) guarantees access to the good for low-income groups (+) if tradable: additional income for low-consumption	(+) target needs to avoid poverty (e.g., energy poverty) (+) independence from price changes	(+/-) depends on the design, needs satisfaction unintended co-benefit	(+) need-focused (+) good at meeting expensive and hidden needs (−) slow at meeting novel or differing need-satisfiers	(+) no material shortage (−) differing need-satisfiers	(+) indispensable for many needs (−) differing need-satisfiers
2. Support of social inclusion	(+) enables market participation (−) endanger collective institutions (+) enable care and community work (−) income and wealth inequality still relevant	(+) only for the job guarantee: inclusion via workplace (−) green conditions rule out certain groups	(+) information for all entitled households (+) shift towards labour productive services lower unemployment (−) different take-up of social groups	(+) distribution beyond ability/willingness to pay (+) supports environmental justice (+) emphasizes consumption corridors (−) power misuse	(−) if not distributed to everyone: stigmatizing (+) if distributed to everyone: signals consumption corridors	(+) furthers political and economic democracy (+) time-banking reduces income inequalities (−) success depends on skilled labour (+) support re-regionalization	(+) no stigmatization (+) equal benefits (+) restrict influence of education and knowledge inequality	(+) equalizing consumption patterns (+) limits the sphere in which income inequality matters	(+) spaces without economic barriers
3. Respect of ecological limits	(−) high carbon expenditure (−) overconsumption through income effect (+) reduced work-related consumption (+) less efficiency consumption	(+) functions as a climate strike fund (+) support sustainable work	(+) targets luxury and lock-in emissions (+) non-monetary benefit (e.g., free time) foster sustainable lifestyles (+) further resource-light time-use	(+) caps guarantee limits are kept (+) tackles overconsumption (−) might legitimate a certain amount of harmful consumption	(−) might reinforce lock-in emissions (+) risk of overconsumption	(+) supports demand for transformative goods and services (−) no direct link towards impact reduction (+) indirect benefits through re-regionalization	(+) lower carbon intensity than cash benefit (−) no ecological focus, potential overuse (+) inclusion of eco-social infrastructures possible	(−) Potential overconsumption if good can also be used for wants (+) crowding-out of alternative unsustainable goods (+) eco-efficiency	(+) provides ecologically beneficial need satisfiers
4 Freedom to determine own lifestyle	(+) reduction of working time and work-sharing possible (+) market autonomy (+) experiments with other lifestyles	(+) possibility of opting-out of unsustainable sectors (−) green behaviour conditions	(+) additional possibilities (−) nudging	(−) high-consumption groups cannot buy themselves off the incentives (+) equalizes market liberties (positive freedom)	(−) differing degree or quality wanted (+) self-binding mechanism	(+) opens the space for new business models and solutions	(−) top-down decisions on need satisfiers (+) negative freedom less relevant, support positive freedom	(+) top-down decisions (+) support positive freedom (−) nudging	(+) necessary infrastructures for positive freedom (−) eliminates some options (negative freedom)
5 Economic viability and growth independence	(−) costly for high levels (+) allows post-growth lifestyles	(depends on circumstance and type of transition income)	(depends on circumstance and type of shift voucher)	(+) no costs for the benefit itself (−) enforcement and political feasibility	(−) costly (+) high acceptance	(−) many specific conditions (+) low costs when voucher is taxes	(−) no focus on efficiency and avoiding superfluous benefits (+) low transaction costs	(−) high running costs (+) more efficient than individual purchase (−) risk of overconsumption	(+) low running cost (−) subject to power structures
6 Transformation incentives	(+) work subsidy (+) post-productivist lifestyles (−) remains within market distribution	(+) speed up exnovation processes	(+) different incentive structure (+) information on new options	(+) Stronger incentives for high-impact consumption (+) lowers commensurability (+) transparency and clearer expectations	(−) no transformation of lifestyles (+) might increase acceptance of opponents for environmental policies	(+) emergence of eco-solutions (+) possibly fast solutions (+) furthers collective action	(−) no ecological focus (+) contributes to decommodification (+) inclusion of eco-social services possible	(−) Veils the ecological “costs” of production (+) reduces market dependence	(+) enable sustainable lifestyles (+) creates non-commercial spaces

3.1. Universal Basic Income (UBI)

In the past, very different forms of basic income proposals have been developed without explicit consideration of environmental impacts, ranging from Friedman's neoliberal idea of a basic income take [70] to van Parijs idea of an empowering universal basic income [16]. The evaluation of these proposals largely depends on whether the basic income scheme is designed to replace existing benefits such as public education and healthcare [67], and the assumptions that are made about the ecological impacts of the resulting behavior change. Although the evidence for its ecological benefits is less pronounced, universal basic income is advocated in the discussion on sustainable welfare [3,34,41,55,71–75].

Although only a small percentage of published academic journal articles on basic income have addressed ecological arguments [63], it is worth highlighting that several authors have explicitly discussed this issue and also developed their own green basic income schemes (e.g., [60,61,72,76–81]). In the following, the proposals of UBI will be distinguished by their conditionality.

3.1.1. Unconditional Basic Income

Unconditional basic income is general-purpose money that is provided independent of a means-test and given with full autonomy over its use to specific people. In its original idea, it is given to all citizens but there might be more humble versions, particularly during the introduction phase, which is generally limited to only part of the population e.g., children. Given this, Unconditional Basic Income has five characteristics [82]: It is periodic, i.e., paid on a regular basis and not as a lump sum; given to individuals (and not households); universal (i.e., without means-test) and unconditional, for example without demonstrating willingness-to-work; and, particularly relevant for this case, it is a cash payment (not a voucher or in-kind benefit).

It is beyond the scope of this section to reproduce all arguments that have been exchanged on the unconditional basic income as these have been well-documented [66]. However, a number of arguments are worth explaining to show that a certain amount of basic income is likely to be necessary, at least during a transition period, in order to guarantee sustainable welfare: First, social inclusion in today's market society also includes being able to participate in the market. Similar to the idea of pocket money given to children, some universal basic income is necessary for full participation in market societies—even if all needs are taken care of. With lower commodification, i.e., a smaller share of essential goods and services being distributed via the market (as advocated by many post-growth scholars), the needed amount of basic income would be replaced by other welfare benefits (see following sections). A second argument for providing a certain amount of basic income is the constant emergence of new social risks, that cannot yet be captured by existing benefits, because the process of discovering, assessing needs, and developing welfare benefits takes some time. In this case and also when need satisfiers differ or the necessary amount might be difficult to assess, basic income provides an insurance against changing needs. A third argument is ecological advantages resulting from basic income operating as a "work subsidy", which trades resource-intensive for labor-intensive production processes [83].

There are also arguments regarding why other welfare benefits should be prioritized, for example, the decentralized production and consumption schemes that result from money and not rights-based access could make it costly and difficult to establish complex institutions (e.g., hospitals). It could also undermine collective institutions e.g., unions, insurance systems, which play a vital role in the functioning of societies. Monetary benefits leave the risk of increasing market prices or expensive needs to the individual and hence risk under-provisioning of needs [43]. The income inequality is only mildly reduced through unconditional basic income and income and wealth would still dominate inclusion and provision.

Another argument against unconditional basic income is illustrated by a study finds that Finnish public welfare services (e.g., for health, education, social services) have lower material and carbon intensity per Euro spent than an average Finnish household has per Euro spent [13]. This indicates that

unnecessarily providing benefits in-cash, and not as public welfare services, forgoes possible carbon reductions. Similarly, several scholars have highlighted the risk of overconsumption, which could result from the income effect of a high basic income [66].

Yet, a too-low basic income, which rules out some minimum level of autonomy on the market, also risks forgoing positive effects. Basic income has been advocated as raising workers bargaining power and promoting post-productivist lifestyles [63] by lowering the necessity to engage with the labor market through decoupling of the labor-money-nexus, reducing working time, choosing more leisure and less material consumption, or engaging in work-sharing [67,84,85]. It could also reduce inequality and the importance of positional goods [66] and enable collective change [86]. By privileging disposable time over disposable income and allowing experiments with different forms of living beyond growth-based paradigms [78], enabling community and care work [67], and reducing work-related expenses (e.g., commuting) and (time-) efficiency consumption (e.g., tumbler for drying) [87], it could also reduce resource-intensive consumption. Yet, a too-low level of basic income, on the contrary, would risk this fragile (and disputable [66]) trend towards post-productivist lifestyles.

These arguments make the case that basic income should only be provided on a moderate level. The amount should be set at a level, which includes (a) benefits for goods and services necessary for subsistence, that cannot be specified sufficiently and hence cannot be provided by other welfare benefits, (b) a risk premium on the emergence of new needs, and (c) (in a market society) an “autonomy budget” to allow for market participation.

3.1.2. Transition Income

Another variation of basic income is the transition income. It is money that is provided to a certain group of people depending on specific circumstances, conditions, and behavior. It is similar to a universal participation income, which is only provided for meaningful contributions to society [20], with meaningful being focused on environmental considerations. Contrary to universal basic income, it does not have to be given on a regular basis but also as a lump sum. It can also be given to non-individuals like households and is strung to certain, ecologically relevant, conditions. In distinction to the other benefit systems and in commonality with UBI, it is issued in monetary terms, hence it can also be called a green conditional basic income [63]. Recently, the concept has gained some attention in sustainable welfare research with proposals like the Ecological Basic Income proposal of Schachtschneider [88] and the Ecological Transition Income of Swaton [89]. The job-guarantee [90,91] can be interpreted as a variation of the transition income when the jobs offered are particularly resource-light or contribute to environmental conservation in one or the other way.

Transition income is not a wide-spread proposal, but several real-worlds cases have been analyzed: The Brazilian Bolsa Verde is one example where funds are given to families in environmental conservation areas on the condition that they participate in environmental training activities, engage in forest revitalization projects, and refrain from environmentally damaging activities [63]. Also, the German Green Civil Service Programme can be interpreted as a green job guarantee, although the level of income and limited duration lowers attractiveness for most citizens. A transition income might also be issued when workers lose employment in brown sectors due to climate protection measures e.g., automobile exnovation, or as an income guarantee during times of retraining for green skills. A low transition income might also be issued as compensation for carbon taxes [92]. This could be particularly effective when conditioning it on certain green behavior like abolishing the car or not flying.

For an ecological transition, which entails a necessary phase-out of certain activities, a transition income could speed up the transition time as this could activate latent willingness to opt-out of unsustainable sectors. Such a transition income could work like a “climate strike fund” for the most climate-damaging jobs and sectors. It could undermine the “climate-political corporatism” [93] that has aligned the interests of workers with capital around growth-strategies. Instead, it would offer the security to experiment with alternative, more sustainable ways of living [66] and contribute towards sustainable work [59].

Yet, the green conditions being attached to income transfers are faced with reservations: Options for pro-environmental behavior might not be equally available to everyone, reinforcing existing inequalities and they might particularly target the poor although wealthier people are expected to be the first to transform lifestyles [63]. These arguments are more valid when it comes to pro-environmental consumption choices than transition income that is paid as a substitute for the exit out of polluting jobs.

The transition income could be paid for a short-term period and in order to promote a transition e.g., from brown to green sectors, or paid for a longer period as a form of “ecosystems service payment” for ecological protection activities or sustainable lifestyles (e.g., reduced-working hours, low-carbon-lifestyles). Although needs are not at the center of the transition income, it could be part of a new form of social insurance for climate-change-related risks [94,95].

3.2. Universal Basic Vouchers (UBV)

The second class of welfare benefits is universal basic vouchers. Vouchers have not been examined by sustainable welfare scientists, although even some basic income literature suggests: “Vouchers should be taken more seriously, as a middle road between in-kind and cash transfers . . . Indeed, one can think of cash as being simply a voucher, one with few constraints on fungibility” [43]. In practice, vouchers have been implemented by the private and the public sector in very different forms, for example as housing vouchers, service vouchers, luncheon vouchers, gift vouchers, employment vouchers, training vouchers, sports vouchers, food vouchers, etc. [64].

Education vouchers were already proposed by Adam Smith in the Wealth of Nations (at a time when schooling was not yet universal) but also by Milton Friedman [96] (at a time when schooling had been universal for quite a while). The latter is also the reason why vouchers have had—at least among left-wing groups—a bad connotation as an instrument for welfare state retrenchment and privatization [64]. However, past use tells little about potential use. Voucher proposals are to be evaluated according to the criteria of sustainable welfare. The results depend on the considered time and case, just as Adam Smith and Milton Friedman’s proposals can be seen as even opposing strategies—in the light of their times.

Vouchers also evoke bad connotations since they have been implemented in the global north for rationing during war and post-war times and are particularly in the global south still used today in emergency situations, e.g., as food vouchers during hunger crisis [97].

Although vouchers have frequently been implemented for unsustainable purposes (e.g., boosting growth [98]), this must not veil today’s applicability [99]. Conventional research on vouchers has pointed out that the purpose of the voucher (e.g., social cohesion, equality of opportunity) matters for its design [100]. This suggests that, in some way or another, the following four types of vouchers could also contribute to sustainable welfare.

3.2.1. Shift Vouchers

Shift vouchers are discounts provided to promote environmental behavior and consumption patterns. They differ from UBI in that they provide non-cash benefits and share with the transition income the focus on behavior change. Contrary to other voucher proposals (Sections 3.2.2–3.2.4) and similar to income benefits, the shift voucher can be denominated in the national currency, hence establishing a subsidy for a certain kind of good or service. They might also provide non-monetary benefits like faster or unbureaucratic access. Importantly, the good or service would also otherwise be accessible, and the recipient group is not limited to poorer households. On the contrary, as wealthier households tend to have larger environmental footprints and behavior, change is likely to have the greatest impact when targeted at their “luxury emissions” compared to “subsistence emissions” [101]. Still, also many income-poor households in the global north consume more resources than would be compatible with ecological sustainability (for Finland: [102]) Nonetheless, one could also use shift vouchers to overcome lock-in emissions, which prohibit poorer households to move towards

environmental friendlier products and services. Such measures are even accepted by advocates of universal basic income [63].

Also, in the literature on sustainable welfare, the idea behind shift vouchers enjoys widespread acceptance: Koch states that “ecological investment, for example into retrofitting houses, only has a chance of being perceived as legitimate, if it is accompanied by countervailing social policies that, for example, assist homeowners in paying for ecologically useful measures” [71]. Shift vouchers operate by two channels: Like subsidies, they change the (monetary) incentive structures. In addition, when distributed to recipients, vouchers also provide (new) information on the availability or price of a certain kind of good or service, lowering information barriers to take up a new product or service. This can speed-up transformation processes. There exists multiple empirical evidence that the uptake of a service can even be increased through the distribution of a voucher when that service would also otherwise be accessible and one can assume knowledge of the service by the recipients (e.g., [103]).

Particularly when the benefits are in non-monetary form, e.g., additional free time from work in the form of an “ecological leave” for non-flying and other environmentally friendly behavior, they could prove particularly effective in changing the behavior of wealthier households, since price change have lower incentives for richer households [104]. A social justice perspective emphasizes that behavior change of wealthier households should be targeted first [63].

Next to that, also more conventional vouchers, like sports vouchers [99] or fruit and vegetable vouchers [105], can be seen as shift vouchers, when they replace unsustainable consumption (e.g., meat consumption) or energy-consuming time-use patterns (e.g., car driving). Further ideas for shift vouchers, that might not come to one’s mind when thinking about ecological goals but that could still profoundly change lifestyles, are shift vouchers for repairing utensils or shift vouchers for cultural events like concert which have a particularly low ecological impact per time-use. They can help to push for more sustainable production by shifting the consumption of goods to services.

Taking into account that services also have an environmental impact [48], shift vouchers can nonetheless contribute to a more resource-light but work-intensive economy. Similarly, a shift towards a less ‘labor’ productive [67] and more amateur economy (“Cinderella economy” [106]) could take place, increasing life satisfaction and happiness [107] and supporting essential but undervalued activities such as care work [67]. A positive side benefit could be lower unemployment.

Ultimately, shift vouchers represent a form of “nudging” for sustainable lifestyles [108] and are hence part of the ethical debate on nudging and liberty [109,110]. Except for the case when they help to overcome lock-in emissions, no poverty prevention can be assigned to them. For the endeavors of sustainable welfare, shift vouchers should particularly be applied to crowd-out luxury emissions by more sustainable consumption patterns and address the underconsumption of a good or service with positive externalities, like locally produced organic food.

3.2.2. Quasi-Currency Vouchers

Quasi-currency vouchers are entitlements allocated to recipients to restrict and organize usage of a scarce good. Contrary to shift vouchers, they are not denominated in national currencies but represent a new currency on their own. Quasi-currency vouchers do not seek to support the use of a certain good or service like other vouchers do, but they distribute the use of resources and sinks. Particularly for societies with high economic inequality, this can be a useful tool for managing the distribution of scarce but necessary resources. The reason for that is explained by the Weitzman paradox [104]. It states that prices are less effective in delivering goods and services to its optimal use with increasing inequality. This is the case because the incentives of prices work relative to the disposable income of a person. The relative costs of a specific price for a ton of carbon is weaker for high earners than for low earners. Both from the perspective of social inclusion but also effective environmental policy, this is problematic: Due to their higher financial capacities, high-income groups tend to have more options for behavior change and since they tend to have a larger share in resource use and higher greenhouse gas emissions, they also have a larger reduction potential. Hence, it would be more effective to start reducing the

environmental impact of wealthier households. Yet, with a carbon price (instead of rationing), they literally can buy themselves off from the steering effect of a carbon price through their higher income.

Hence, economists have proposed alternative systems, which set caps on emissions or resource use and distribute the allowances. The first ideas originated in the field from the concept of “contraction-and-convergence” and were further developed into “personal carbon allowances” and similar proposals. The idea of personal carbon allowances and absolute caps for energy, resources, and emissions have been emphasized strongly in post-growth research [3,71,111–120]. In order to ensure the socially acceptable design of these measures, the key question is how the entitlements are distributed and whether they can be traded.

A convergence of per-capita resource use and emissions can contribute to carbon justice and consumption corridors. Non-tradable allowances constitute a form of rationing that has been present in historical times of resource crises like food shortage war, or post-war times [121]. Given the current debate about climate emergency, the idea of rationing carbon might gain new relevance.

If exchangeability of carbon allowances into other currencies is constrained, quasi-currency vouchers become similar to special-purpose money, an idea that is advocated by many post-growth scholars (e.g., [35,85,122]). The advantage of goods and services being only accessible via special-purpose money is the lower commensurability [35], which describes the fact that particularly ecological factors (like water, energy, nutrients) are not—or only to a limited level—substitutable by each other. Translating non-commensurability into the design of the currency forms clearer expectations about individual sustainable consumption levels (e.g., CO₂-emission per capita). General-purpose money blurs the non-commensurability and hence veils real-world scarcities of resources, energy, and sinks. In addition, general-purpose currencies are today highly unequally distributed. Quasi-currencies, on the other hand, establish parallel spheres with own and more equal distribution patterns. Hence, it raises the likelihood that income-poorer households can also access necessary goods and prevents wealthier households from overconsuming at the expense of poorer households. Unluckily, this might also legitimate the consumption of these harmful goods to the level of allocated vouchers.

Similarly to wealth and income caps [40], quasi-currency vouchers contribute to equality; yet indirectly, by limiting the scope in which income inequality matters. Quasi-currency vouchers hence imply a power-raise for low-income households. This constitutes an advantage in terms of the goals of sustainable welfare outlined in the first section of this paper, but it also lowers its political feasibility. An equal-per-capita account will, unless full tradability is guaranteed, be hardly implemented because it would entail sudden and serious lifestyle changes of the wealthier part of the world. Furthermore, such reforms are rather complex to implement [114] and require strong enforcement. Given this, the concept of non-tradable quasi-currency vouchers is likely to be diluted by existing power structures, as has for example been the case with the European emission trading scheme by changing the initial distribution of certificates and ambition levels. Furthermore, a successfully implemented rationing system constitutes a strong source of power. As Kallis and Martinez-Alier put it: “Who controls resources (and sinks), controls this society. Therefore at least in principle, there is a strong incentive for a group to control and mold a cap policy to favor its interests and increase its power over the rest of the population” [112]. Unless its institution is democratically controlled, these systems risk becoming a source of power misuse. Two options exist to meet these risks, one is to start with high tradability and lower the share of allowances that can be traded over time. Another approach is to distribute only a part of the non-tradable entitlement equally per person while the rest is auctioned.

Beyond climate policy, quasi-currency vouchers can also be applied in other spheres, which entail scarce but necessary goods or services. In case of housing shortage, housing vouchers could be distributed to every citizen, which he or she can use to pay part of the rent for a flat. Homeowners on the other hand have to pay their property tax in this quasi-currency voucher. When they occupy their property themselves, they can use their own vouchers to pay the tax; when they rent their flat, one part of the rent can be the voucher. In an area of average housing availability of 60 m²/person, citizens could, for example, receive a voucher for 30 m² per person and landlords are required to

pay 0.5 vouchers for every m² they own. Thus, property owners would have a strong incentive to make sure their flats are not under-occupied because this would cause problems when paying the tax. At the same time, this system would still allow for some variation of the individual housing space. In opposition to traditional housing vouchers, which are given to the poor and which tend to foster spatial socio-economic segregation [123], these housing voucher support social mixtures because when landlords rent a luxury apartment with high space consumption per person, they will seek a denser occupation in the remaining flats. Households that have, usually because of a smaller budget, lower housing demand will be favored. As a consequence, the need (expressed in vouchers) not the demand (expressed in monetary ability/willingness to pay) for housing receives more attention in housing allocation. Potential environmental co-benefits would be a reduced land, energy, and resource consumption.

3.2.3. Needs Vouchers

Similar benefits can be attributed to needs vouchers. As the name suggests, needs vouchers are given to people negatively affected by current or upcoming policies with the goal of ensuring their needs are sufficiently met. As quasi-currency vouchers, they are a means to tackle poverty (e.g., energy poverty), but they do so without questioning the upper tail of the income and wealth distribution. Neither do they strive to transform consumption patterns in a sustainable way, even when, in some cases, the benefit might take the form of a particularly environmentally friendly good or service. The general idea of needs vouchers originates from the observation that many transformative policies, like environmental taxes, bear negative consequences for poor households. As an alternative to redistributing the gained taxes in all-purpose money (e.g., transition income) or construct infrastructures that provide alternative needs-satisfiers (Section 3.3), the benefit could be issued in a voucher to needy households. Needs vouchers differ from shift vouchers on a gradual scale: A need voucher that is given to everyone (e.g., certain amount of free local transport) and provides a benefit that will likely crowd out an unsustainable need-satisfier could also be described as a shift voucher. Yet in the absence of other options, needs vouchers might also be provided for non-sustainable need-satisfier, like vouchers for low-income households with a certain amount of free petroleum gas. This could lower negative social consequences and increase acceptance for environmental policies (e.g., increased electricity prices). Unlike shift vouchers, the goal of needs vouchers is not to overcome lock-in emissions, but to compensate for lock-in emissions or other sources of poverty.

Needs vouchers have been proposed in environmental research from several perspectives: As compensation to avoid regressive effects of environmental taxes [67] and in ecological social work as vouchers for electricity and food to support vulnerable people in case of climate-related hazards [124]. Secondly, need vouchers are proposed as eco-social policy. One example is the idea of the “Freedom Pass” [36] issued to every UK citizen to provide access to free local public transport services. Another example are entitlements for information service that cover the cost of “basic phone, Internet and the BBC TV license fee” [36]. More specific proposals include vouchers to buy exclusively fruits and vegetables [105] or vouchers for locally produced sustainable food [85]. Yet, if vouchers provide free (and not reduced) access, overconsumption beyond the needed level of that good might be the consequence. Hence, for ecologically sensitive goods, free vouchers should only be provided for the absolute minimum. Obviously, this would lead to some trade-off between ecological incentives and meeting needs.

Issuing benefits in vouchers and not in money has also been debated as an alternative to basic income schemes (e.g., [63]). Murphy describes this as a “near Basic Income Guarantee (BIG)”: “A near BIG program is income-like but restricted in the range of spending. I am thinking here of credits or vouchers, which could be spent only on whatever is judged appropriate by the issuing authority. These could include childcare, education, food, health care, or housing. If the provision renders all recipients capable of participating in an important market, it merits the title of “near BIG”. A title that

could be applied to all the areas just listed might be hard to distinguish in its effects from a full-fledged BIG" [125].

Although a voucher that can be exchanged for a range of services gets closer to a monetary transfer [15], basic income advocates have been criticizing voucher schemes as paternalistic and an "undermination of a main premise of a UBI or BIG—a commitment to personal freedom of recipients" [63]. In addition, vouchers that are only distributed to needy households could lead to stigmatization. The latter objection could be resolved by issuing vouchers to everyone (independent from the need) and could also have the side-benefit that it signals maximum sustainable consumption levels. The former objection with reference to freedom deserves more attention. The argument is particularly valid if individuals desire a certain good to a differing degree or in other qualities. Yet, two defending arguments can be put forward.

Firstly, need vouchers might not fully replace basic income. In this case, their task would not be to guarantee free consumer choice but to ensure needs are met. Actually, vouchers might be much better suitable to ensure this than money, since the actual value of a cash benefit depends on the temporal and spatial fluctuation of market prices, while needs manifest themselves in real-world need satisfier (like food, water, housing space, etc.). Vouchers denominated in amounts of these goods and services establish an insurance against variation of price changes and hence lower the probability of benefits falling below needs.

A second defending argument to the paternalism objection is put forward against a narrow understanding of autonomy. Heath and Panitch argue that cash is wrongly conceived as "neutral", by which they mean its value is equal for everyone. Yet, many people prefer to be given in-kind benefits because they use these as self-binding mechanisms. "Most of us know from everyday experience that not everyone is equally good at handling cash" [43]. Similarly, a preference for non-cash benefits might, for example, exist because people's preferences are instable over time (e.g., in the morning: Take the car to drive to work; at the end of the week: Have done more sports e.g., through cycling to work). Also, avoiding negotiation processes about the use of money with other household members could establish a reason that individuals prefer vouchers over cash. Hence, Heath and Panitch conclude, providing benefits in non-cash might indeed be an exert of autonomy, not a limitation to it [43].

Consequently, from a sustainable welfare perspective, there is a range of applications for needs vouchers. Particularly in societies with large economic inequality, needs vouchers can ensure everyone can access certain goods and services to a certain degree. Examples are resource-intensive but necessary goods like electricity, water, internet, or public transport. They could be provided as vouchers free of charge to a limited amount, although they should only be used as a solution of last resort. Preferable are vouchers that seek to avoid unsustainable lifestyle e.g., like vouchers for solar heating or energy-efficient lighting systems instead of voucher for grid electricity.

3.2.4. Commons-Innovations Vouchers

The fourth type of vouchers, commons-innovation vouchers, are issued to enable the emergence of transformative innovations. Commons-innovation vouchers establish the demand for a certain good, but contrary to the shift voucher the goal is creating new ("innovative") institutions that serve communities and society ("commons"). Hence, the voucher is issued before the institution is (fully) developed or expanded and can be useful for supporting the emergence of eco-social innovations [126].

Examples include vouchers for local transport in regions where there is not yet sufficient demand for local transport to be operating [127] and vouchers for locally produced organic food [63,85] in regions where the demand for this is still too low for farmers to switch towards organic agriculture. The strategy has been implemented with childcare vouchers in areas where not enough public childcare is (yet) available and non-public solutions are needed to timely meet the demand (e.g., through daycare staff).

Another example is collaboration vouchers, which are proposed as "annual grants given to each citizen, able to be spent on the membership fees of any registered collaboration . . . Unions may become

registered collaborations, able to receive vouchers, and hence represent not only salaried employees but also the precariat and unemployed" [20]. It could help provide entitlements for political representation and establish civil society organizations, which are seen as crucial for transformation.

Also, some timebanking institutions have issued vouchers for new members to be able to receive services before having to provide services. Timebanking is analyzed as particularly helpful for expanding social networks and suitable for reaching socially excluded citizens [35]. Timebanks also possess the advantage that every hour of work counts equally and thereby rule out income inequality resulting from different hourly wages. For these reasons, timebanking is appreciated as a highly desirable institution for sustainable welfare [113,128]. Particularly digital timebanks operated by platform cooperatives can constitute an alternative to an exploitative crowd working concept of platform capitalism. Vouchers for free access to these services of platforms cooperative an establish network effects and thus facilitate the necessary participation in these platforms [129].

An even more encompassing example of commons-innovation vouchers are complementary local currencies, which are widely proposed by post-growth research for promoting relocalization (e.g., [3,71,114,130], for an overview see: [35]). Complementary local currencies give access exclusively to locally produced goods, although these goods and services are also accessible by all-purpose-money. Some scholars propose to issue basic income in a complementary currency ("which is exactly what a voucher is" [63]). Two proposals stand out for their elaborateness: Douthwaite's proposals of regional energy bonds, which pay the bearer the price of a specific number of kWh on the day they mature [113]. "Once the energy plant starts supplying power its managing committee could as well turn it into a sort of bank, issuing energy 'notes' that the locals could use for buying and selling goods, secured in the knowledge that the note has real value as it could always be used to pay energy bills" [114]. The second proposal is Hornborg's concept of a spatially encoded complementary currency (CC) that can "only be used to purchase goods and services that are produced within a given geographical radius of the point of purchase. This radius can be defined in terms of kilometers of transport, and it can vary between different nations and regions depending on circumstances" [122]. He states multiple possibilities of scaling up the currency: "distribution would be to provide each citizen with a plastic card which is electronically charged each month with the sum of CC allotted to him or her ... states can choose to make a proportion of their social security payments (pensions, unemployment insurance, family allowance, etc.) in the form of CC. As between a third and half of some nations' annual budgets are committed to social security, this represents a significant option for financing the reform, requiring no corresponding tax levies" [122].

What is crucial about complementary currencies and other commons-innovation vouchers, is how the relationship between the issuer and the provider is structured. The recipients' needs are not at the center of attention of commons-innovation vouchers but the establishment of new institutions. Yet, if the use of vouchers is voluntary and the state is not demanding and not even allowing the providers to pay the tax in the complementary currencies, the financing structure stands on shaky ground. Instead, if the state demands issuers' tax payment in these currencies, it would become a quasi-currency voucher. In this case, commons-innovation vouchers can provide a financing framework for the provision of a certain good or service.

The realization of the benefits of commons-innovation vouchers relies on non-state actors, like companies, cooperatives, or civil society engagement. On the one hand, this demands quality control by the state and includes risk for the quality of the good or service. Hence, the application of commons-innovation vouchers is easier when quality standards are easy to assess (e.g., quantity of km of local public travel) or the quality of the goods or service is already monitored by another institution (e.g., organic food certification). An even larger limitation is that the desired innovation is not taking place. For example, in regions with no skilled labor force, no entrepreneurs with suitable business ideas might be present to create a functioning business model; or when the goods and services are provided by a voluntary organization, provision might depend on the availability of volunteers. Because of this

unreliability, commons-innovation vouchers should not be used to replace other successful welfare benefits or be applied for essential systems like emergency healthcare.

On the other hand, the provision of welfare benefits by private actors has three advantages. Firstly, it can spread distribution systems to non-state sectors, like vouchers for local food baskets which influence the (private) food market. Secondly, commons-innovation vouchers can be used for finding solutions for challenges when no best-practice is yet available. They can also implement institutions that cannot or only ineffectively be provided by the state to bridge times when the state is not fast enough in establishing the welfare benefit. Thirdly, non-state actors can also issue commons-innovation vouchers and create transformative business models. For example, housing cooperatives could issue rent contracts for a certain amount of square meters per person of the household (not for a fixed flat). When household size changes (e.g., new children are born or adolescence move out), households are guaranteed to be able to swap to flats of suitable size. This can have social benefits (e.g., enough housing space for everyone) and ecological benefits (e.g., no oversized flats) at the same time.

In comparison to monetary benefits, commons-innovation vouchers have the advantage that they entail signaling. They advise certain acknowledged minimum consumption levels e.g., for fruits and vegetables or for sports activities and can raise the consumption for under-consumed goods (e.g., bike-sharing infrastructure, night trains, community space). They might also signal certain points in time when people collectively switch their behavior. Local bus services, for example, need a certain minimum user intensity to be economically feasible. Even when this user intensity could theoretically be feasible because sufficiently many people would be willing to use the bus, in practice a negative spiral of low participation, worse quality, lower participation, etc., often lets these institutions erode. The introduction of commons-innovation vouchers for free local service could provide a salient point in time when sufficiently many citizens decide to try a new service or even organize a community bus themselves and thereby let a sufficiently good service emerge which can persist.

In summary, commons-innovation vouchers support the emergence of community-based institutions, cooperatives, and common ownership or the consolidation of grass-root initiatives, which often have difficulties for sustaining them [71]. Particularly, complementary currencies can re-localize economic activity [114] and contribute to community building [35].

3.3. Universal Basic Services (UBS)

The third domain of welfare benefits is infrastructures and their services. Recently, the idea gained new attention in sustainable welfare research and beyond through the proposal of universal basic services [17,36]. The idea of public services is to extend “the same principles of universal access, free at the point of need, which we already manifest in our National Health Service, our public education, our democracy, and our legal services” [36]. Everyone should be entitled to these services in order to meet their needs, regardless of ability to pay [17]. The proposals include the extension of public services to a range of new fields, such as “Shelter, Food, Transport and Information” [36] and “pipe and cable utilities (piped water, waste water and sewerage, electricity supply, domestic piped gas and telecommunication both copper wire and mobile); transport infrastructure comprising railways, roads, filling stations, car retailing and servicing and all public/social vehicles such as trains and buses; food production, processing and the distribution network, including supermarkets; and retail banking services and payments systems. Alongside these is the providential foundational economy, essentially the entire welfare state: healthcare, education, social care, police and emergency services and public administration. Housing is a critical sector that sits across both domains” [17]. Proponents have argued for the particular ecological advantage of UBS: “Public provisioning systems for healthcare and education are better able than market systems to promote sustainable consumption, to implement national strategies for reducing greenhouse gas emissions and to coordinate sustainable practices such as active travel and local food procurement” [17]. UK’s Labour party has also adopted the idea of universal basic services with an explicit link to reaching ecological transformation: “There is no doubt now that keeping planetary warming within limits necessary for continued human habitation will

require transformational change of an unprecedented scale and pace. Such radical change can only be delivered through collective action and UBS may have a key role to play in delivering the rapid and mass behavioral change needed. For example, universally free public transport could be a socially just, efficient and effective way of ending our car dependency" [19]. Subsequently, three types of welfare benefits within UBS are distinguished according to the provided service, goods, and access.

3.3.1. State Services

The first category is state services, which are confined to institutions that offer services free of charge. This is probably the most prominent type among public infrastructure benefits and closely connected to the approach of (northern) welfare states. A large percentage of social benefits are provided as public services people can access in case of need and which are paid and maintained by the state or state-like organizations, for example, healthcare, schooling, child, and elderly care. These services are sometimes called free-to-use services since they are free of charge for the recipient.

State services can also be extended to many other areas as mentioned above. State services can be distinguished from free consumption goods or public infrastructure because their main benefit consists in a service that is provided by other members of society and its availability is only restricted by the availability of skilled labor.

These public welfare services are suspected to have lower material and carbon intensity per Euro spent than an average household Euro spent (data for the Finnish case: [13]) and hence are particularly beneficial from an ecological point of view. For these reasons, they could also be extended to other ecologically useful services, like free local transport or free repair services.

As it is also noted in recent proposals for universal basic services, state services are "most appropriate for goods and services whose quality is objective and not a matter of personal taste. When it comes to health, most people want the same thing: access to the best available medicine delivered in a compassionate and professional manner. For goods like food or clothing, however, as soon as provision reaches above a basic level, different people will start to have wildly different tastes, preferences and desires and the public sector is less equipped to cater for these needs" [19]. Therefore, one risk consists when officials, experts, or politicians determine for people what they need [17], but for many fields at the moment of need citizens have only little knowledge about the appropriate need satisfiers or no possibility to state them (e.g., emergency medical aid). People are also very differently skilled in finding suitable need satisfiers. State services do not only guarantee the same quality of service but also an insurance against different capabilities of identifying suitable need satisfiers. Hence, State Services restrict the sphere in which educational and economic inequality matters.

Another potential risk of vouchers is overuse when the voucher is free of charge and this veils the social costs of provisioning. This might be problematic when it overburdens and risks to collapse the welfare systems or undermine the quality of the services. Examples are people visiting doctors for minor ailments, which could exclude more serious cases from the provision or people using a crowded bus for laziness of walking could exclude others who need to take the bus. Services tend to be more environmentally friendly than goods, but overuse could still be problematic from an ecological perspective since services also always entail some resource and energy use [48]. As in most cases, the uptake of a state service is connected to some (non-financial) costs or not particularly pleasing (e.g., waiting time at the doctor, medical treatment, standing in a crowded bus), the actual risks of overuse are likely to be moderate.

3.3.2. Free Consumption Goods

Free-consumption goods are goods that are provided free-of-charge for all citizens or a specific group e.g., elderly, children. Examples include free school meals, meals on wheels [36], free internet, and drinking water in public spaces. What characterized these social benefits is that the good is (ecologically) scarce and, hence, there is a risk of overconsumption. Since exclusion is possible, the proposed goods are classical "private goods" like shelter, food, and water [17,36].

Their free provision features the advantage of guaranteeing people's needs for such essential consumption, independently of their ability to pay. Obviously, this only holds where it is unproblematic to decide top-down what is produced since it is easy to say what the need satisfiers is constituted in (e.g., drinking water, healthy school meals). In this case, free-consumption goods might even be a prerequisite for positive freedom. They also serve social inclusion since it limits the spheres in which income inequalities matter, which could lead to different qualities of the provided goods. Another positive consequence can be the equalization of consumption patterns, which can lead to more social inclusion.

This equalization can also be ecologically beneficial when the provision of a good crowds-out other unsustainable goods, e.g., meaty fast-food by climate-compatible school meals, plastic-bottled water by tap water. Yet, one large risk is the potential overconsumption of the good, if the good can be easily used for the satisfaction of wants or might be wasted due to mismatch with the needs of the recipients. As its free provision veils the ecological costs of production, it could also lower conservation-conscious consumption. Yet, in some cases this waste would be outweighed by a more eco-efficient provision (e.g., less packaging and lower energy use with economies of scale). This can also translate into financial savings, making it more cost-efficient than individual purchases. Yet, free-consumption goods always translate into running expenses, which raises the question of long-term financing and resilience against changes in the economic situation. Free-consumption goods can also exhibit transformative incentives, which might be seen as critical when interpreted as nudging, but which could also reduce market dependence of the recipients and thereby establish both more freedom and possibilities for sustainable lifestyles.

Useful fields of application include goods where demand for the good is inelastic; for example, because there is a natural limit to which one can use the goods (e.g., eating only until one is full, drinking only when thirsty). Also, some other resource-intensive goods can hardly be spoiled because their use is limited by the time constraints of people (e.g., the use of free electric bike charging stations is limited by bike travel times). Hence, there is little or no possibility for spoiling or wasting the good and there is little reason that the good should not be freely used by everyone.

3.3.3. Public Infrastructures

The last type of universal public services is public infrastructures, which are classical public goods like parks, forests, information, and streets. It is beyond the scope of this paper to present a systematic overview on this field because research on public infrastructure is vast and recently there has been a steep incline in research and policy proposals on socio-ecological infrastructures, their ecological impact and financing (e.g., [131–134]).

When it comes to sustainable welfare the production of new public infrastructure is central. Next to greening infrastructures, one challenge will also be to consider questions of need such as transport and housing needs and the fair distribution of their consideration in the construction and new rebuilding of infrastructures. In the field of transport, positive examples are bike lanes and vehicle-pooling benches, where people can wait to be picked up for a ride. In the field of construction, examples are the establishment of transition houses and repair cafes or community space, where people can gather and repair their utensils or cloths.

The establishment of certain public infrastructures is often indispensable for the possibility of satisfying needs like mobility, access to drinking water, and food provisioning systems. Well-designed public infrastructures can contribute to social inclusion for example by providing parks, squares, and community space, which allow access independent from economic barriers like entrance-fees or commercial interest of third parties. Infrastructures are also necessary for creating conditions like secure and accessible space, which allow putting freedom into practice. Especially relevant for sustainable welfare is the fact that they can transform need satisfiers from unsustainable to more resource-lighter options (e.g., a shift from car to bike). Depending on the domain, public infrastructure might have particularly low running fees once they are constructed (e.g., parks, streets) and are hence

resilient against changes in economic growth. Last but not least, public infrastructures shape daily practice and determine the boundaries of lifestyle choices. Transforming public infrastructures is hence key leverage for sustainable lifestyles. For these reasons, socio-ecological infrastructures will probably always be a key element of sustainable welfare.

4. Conclusions

This article has set up a framework for sustainable welfare benefits by combining a typology of welfare benefits and sustainable welfare criteria. The resulting nine types of sustainable welfare benefits belong to universal basic income (UBI), universal basic vouchers (UBV), or universal basic services (UBS). The framework was used to categorize existing ecologically oriented welfare benefits and proposals of eco-social policies. The advantages and disadvantages of the different benefits types were evaluated according to the criteria of sustainable welfare and conclusions about its applicableness were drawn. A successful sustainable welfare policy will likely result in a mix of the different benefits, with specifications depending on the area and societal situation. Sustainable welfare benefits do not differ from other welfare benefits in their financial feasibility although they can be supported by ecological tax reforms. While this paper is the first to systematize welfare benefits in the light of sustainability considerations, it also faces limits concerning the policy conclusions that can be derived from the findings and revealed a substantial research gap.

This paper also established the idea of universal basic vouchers (UBV) and is the first to discuss the advantages and risks of welfare vouchers considering environmental arguments. Compared to proposals of UBI and UBS, UBVs are underestimated tools. By categorizing the criteria and arguments for and against the different types of welfare benefits, I hope to have contributed to nuance in the debate between basic income and basic service proposals.

Due to a lack of relevant policies in other research agendas, the policy proposals in this paper mainly originate from research on degrowth and post-growth societies, whose research community has self-critically assessed their proposals as superficial [34]. Hence, the urgent necessity for researchers and policymakers to discuss more detailed sustainable welfare proposals persists. Having compiled design principles of welfare benefits, this paper hopes to raise questions that contribute to this quest.

Researchers and policymakers interested in sustainable welfare will have found a number of links and inspiration on how to extend their toolkit of policy proposals. In this article, the quality and context-dependent applicableness of the arguments could not be exhaustively assessed for different countries and different needs. Hence, it remains for further research to scrutinize the most suitable combination of welfare benefits for real-world cases. The assessed proposals focus on overconsuming countries of the world with usually long-established welfare states. Hence, the findings apply in the first place to Western countries with expanded welfare states. To which degree the arguments are also relevant for the Global South with usually quite young welfare states, remains an interesting field for further research.

Overall, this paper shows how large the knowledge gap about sustainable welfare is. While there is a growing body of research on the social consequences of environmental policies, a similar set of findings of the ecological implications of different welfare benefits is still lacking. The generated framework provides a map of sustainable welfare benefits within which further empirical and theoretical research can fill the blank spots. This article showed that for a reconciliation of social policy and environmental policy, not only the social assessment of environmental policies matters, but social policy design can equally hinder or further ecological sustainability.

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Appendix A

For income benefits, the main relationship exists between the issuer and the benefit recipient. A direct relationship exists also between the recipient and the provider of a good or service when the recipients actually spend the money (and do not save it). Likely there will also be a connection between the provider and the issuer, for example through taxation. Yet, this connection is not necessary (in case benefits are debt-financed or money is spent abroad) and the tax revenue is independent of the exchange between issuer and recipient.

For vouchers, the triangular exchange relationship is closed, which means the voucher is given by the issuer to the recipient, who exchanges it with the provider for a good service. The provider finally returns the voucher back to the issuer. In most cases, the provider receives compensation (money) for the voucher, but handing in a certain amount of vouchers might also be part of the obligation to operate the business model.

For UBS like infrastructures, no direct relationship between the issuer and the recipient has to exist. In some cases, the issuer might inform the public (sometimes even directly the recipient) about the offer. The provider maintains a good, gives access to an infrastructure, or provides a service to the recipient. As compensation, the expenses of the provider will be covered by the issuer. In some cases, the level of compensation depends on the number of recipients taking advantage of the providers' offers. In these cases, the intensity of use (e.g., number of treatments or visitor) constitutes "implicit vouchers" [15]. In distinction to vouchers, the issuer and the provider do not have to be strictly separated; they can actually be identical or highly connected (e.g., National Health Care Institutions).

Appendix B

The categories take into account dimensions that are listed in research on voucher design (e.g., [15,64]), but extend beyond the design categories to be able to describe also benefits types of UBI and UBS. For each category, several design options are possible. The differences between UBI, UBV, and UBS are for some design characteristics only gradual. For example, "one can think of cash as being simply a voucher, one with few constraints on fungibility" [43]. Much of the general critique of vouchers draws on the critique of one specific design option (e.g., the fungibility of the voucher allowing a parallel market to emerge). Thus, for the evaluation of a welfare benefit, the exact design matters, for example if the voucher is not transferable (9a), can be transferred to another person (9b), institution (9c), or is even freely tradable (9d).

Table A1. Design options of welfare benefits.

The Welfare Benefit (Income, Voucher, Infrastructure)	
(1)	entitles for a certain (a) good (b) service (c) access (d) ownership (e.g., wealth voucher [64])
(2)	is valid for (a) a certain product group (e.g., food, sports clubs) (b) certain goods or services (e.g., vegetables) (c) good with certain properties (e.g., regional vegetables) (d) no specified good
(3)	entitles to (a) a constant amount (b) a variable amount depending on external factors or (c) a variable amount depending in traits or behavior of the recipient
(4)	is measured in (a) monetary terms (b) service/goods units (c) time units
(5)	provides (a) (free) full access (Full-service vouchers) (b) a discount upon purchase (c) a non-quantified advantage (e.g., unbureaucratic access)
(6)	is issued (a) on a regular basis (b) once e.g., in an emergency situation (c) when certain trigger events happen or conditions are fulfilled
(7)	(a) expires after a certain date (b) decreases in value over time (c) can be saved (d) can be exchanged for something desirable if not spent within a certain time e) potentially remains unused

Table A1. Cont.

The Welfare Benefit (Income, Voucher, Infrastructure)	
(8)	is given to (a) everyone in the jurisdiction (b) a specific target group (means-tested or privilege(d) (c) applicants (d) legal entities (e.g., companies)
(9)	can (a) not be transferred (b) be transferred to selected people (e.g., family members) (c) be donated to institutions (d) be freely traded
(10)	is issued/paid for by (a) international organizations/the state/counties/municipalities (b) public institutions (e.g., health insurances) (c) NGOs and self-governed institutions (d) private companies
(11)	is accepted and the good/service provided within a certain geographical area of validity (a) accepted by public institutions e.g., municipalities (b) accepted by public sectors (e.g., public hospitals) (c) accepted by non-profit sector (d) accepted by private sector e) accepted by other individuals
(12)	is of (a) explicit character (i.e., paper, electronically) (b) implicit character (i.e., recipients themselves become the “vouchers” that are allocated to certain institutions e.g., school enrolment [15]) (c) neither
(13)	(a) enables exclusive access to the good, which means the good cannot be acquired by other means (b) can only be used up to a maximum consumption when recipients are subject to the welfare programme. If they want to consume more they have to opt-out of the welfare programme (c) an advantaged (e.g., discount) access to the good that can otherwise be bought for regular prices on the market
(14)	relates to the prior situations as (a) introducing a new good (b) providing an existing goods in a new way (e.g., instead of in-cash or in-kind benefits) (c) replacing a market distribution of the good (d) being part of a larger policy change e.g., establishing a compensation for a tax raise.
(15)	is spent (a) ex-ante (e.g., voucher gives direct discount/access when converted) (b) ex-post (money is reimbursed after purchase)

Appendix C

Common-pool goods are not included as an own type of welfare benefit into the domain of UBS for two reasons: (1) In the past, common-pool goods have wrongfully been described as not being preservable because they are subject to the “tragedy of the commons” [135]. Since then, this argument was refuted admitting they require further management for preservation [136]. For this article’s typology, it is crucial that common-pool resources require additional regulation of access: “common-pool resources and common property have a formal or informal system of property rights, and enforced governance that effectively allows those with shared access to exclude others. Common property allocates certain rights to members of a group: access, extraction, management, exclusion, and/or alienation rights” [137]. These relations might either be established by the state and in this case take the form of rights, which means they de-facto establish a form of voucher system. On this account, they will be dealt with in the UBV class. (2) Otherwise, they might also be self-regulated without money, formal entitlements, or contracts by the citizens. This idea of “commoning” enjoys particular popularity in research on degrowth (e.g., [41,138,139]). It emphasizes the importance of welfare provision beyond the market and the state [140] and is related to the question whether social benefits should be provided by the (national) welfare state or rather by regional and/or voluntary citizen-based organizations [141–144]. Although this relates to the interesting research question of what the role of the state shall be in post-growth societies [71,145], it still does not make the case for an own type of welfare benefit as the mechanisms used for governing commons might be equal to the other nine types of welfare benefits.

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