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What is Sustainable Agriculture? Critical Analysis of the International Political Discourse

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Abstract: The concepts, ‘sustainable development’ and ‘sustainable agriculture’, have been shaped by both political discourses of the United Nations and scientific discourses. Using critical discourse and content analysis, we trace the meaning of ‘sustainable agriculture’ in both international political and in scientific discourses to examine and identify key elements of the representation of sustainable agriculture. We found that the meanings of the concept of sustainable agriculture vary markedly: International political actors primarily produce discourses on sustainable development in agriculture and on sustainable agricultural intensification. Scientists tend to emphasise issues of environmental management. Based on our findings, we highlight the differences in the meaning of sustainable agriculture between the political and scientific discourses and attempt to explain them. In addition, discursive gaps are shown that have the potential to hinder the systematic operationalization of ‘sustainable agriculture’, such as the integration of a social dimension of sustainable agriculture.

Keywords: Sustainable agriculture; international politics; discourse analysis; sustainable development; agricultural development; agricultural intensification; environmental management

1. Introduction

The Sustainable Development Goals (SDGs), as ratified by the United Nations in 2015 [1], confirmed the importance of sustainable agriculture for global development. These goals also influence the way of research significantly. It is unclear, however, how the international political discourses have shaped the scientific debate and vice-versa and which meanings are attributed to sustainable agriculture in these discourses.

Several authors have attempted to categorise sustainable development and sustainability discourses. For example, Van der Hel and Biermann [2] pointed at the important role of science for sustainability governance. Hugé et al. [3] have proposed several discursive pathways that demonstrate the diversity of meanings of the concept of sustainable development. Hopwood et al. [4], who mapped important international organisations and their sustainable development approaches, concluded that societal transformation is one central element of the sustainable development concept. Quental and colleagues [5,6] have examined the historic development of both the scientific and the political discourses of the sustainable development concept. We follow these examples of these authors, but critically examine the meaning of sustainable agriculture in the political discourses. In contrast, systematic reviews of the political discourses of sustainable agriculture remain rare: To date, we have found that discourse analysis has seldom been applied. Only a few studies have explicitly addressed the meaning of the concept of sustainable agriculture [7–12], and these have not addressed the meaning of sustainable agriculture in the context of international politics. Moreover, most of the studies that

have related sustainable agriculture to the international political discourse are at least two decades old [13–17]. With the exception of Johnson [18], no studies could be found that have systematically determined both the scientific and political meanings of sustainable agriculture. However, the author rather analyses stakeholder visions. A very recent book edited by Douglas H. Constanze [19] comes closest to what we want to achieve in our manuscript. The authors describe several (local) cases of contesting sustainable agriculture discourses—as represented by various stakeholder groups, such as scientists and national politics.

Concepts related to sustainable agriculture, such as sustainable agricultural intensification, have been connected to international politics and implementation possibilities have been discussed [20–24]. Beyond agricultural intensification, however, we identified a research gap on the current views of international politics on sustainable agriculture. Thus, with this paper, we aim to contribute to narrowing this gap by systematically examining the meaning of the concept of sustainable agriculture in the international political discourses. We frame the international political discourse as a specific perspective on sustainable agriculture through the comparison of discourse elements in the scientific debate. We do not utilize already existing data from articles, such as the one by Velten et al. [12], because we wanted to include the context of the discourse elements, as well as the possibility to retrace all our analysis steps and materials. We ask the following questions:

1. Which are the key elements through which international politics frame the concept of sustainable agriculture?
2. Which are the key elements of the scientific discourses, in comparison?

Key elements mean both the contents and contexts of the sustainable agriculture concept in the discourse. As social considerations have by now been underrepresented in the discourse about sustainable agriculture [12], we give special attention to the social dimension of sustainability in agricultural sustainability in our analysis. Specifically, we evaluate which stakeholders of sustainable agriculture are addressed in which way by the different discourses.

While we agree that a one-size-fits-all solution for sustainable agriculture cannot be found [12,24], we argue that making the understandings transparent is needed to show potentially diverging foci and interests.

We will proceed as follows: The roles of political and scientific discourses are presented as the theoretical background of the work. The third chapter contains our detailed methodological approach. We will provide some of our findings in the fourth chapter, the results section. The results are divided into the description of discourse elements of the political discourse and the elements of the scientific discourses. Both result parts end with a short consideration of the implications of the findings for the social dimension of sustainable agriculture. The discussion section provides a critical reflection of the discourse contents and frames the political discourse with the scientific one. We finally discuss some shortcomings in regards to the social dimension of sustainable agriculture—in particular, in terms of power asymmetries.

2. Background—The Roles of Political and Scientific Discourses in Society

Our research field is located in the international political discourse, as the sustainability concept originates from that discourse and mirrors an essentially global concept. We start our analysis with the central political discourse stakeholders as they crucially influence the discourse. We extend it from here, so that we can then reproduce the discourse with sustainable agriculture. But first we take a step back and ask, what can be expected from the international political discourse? One of the central points of political discourse is its normative character. According to Habermas [25] (p. 6), the nature of democratic politics “presuppose[s] a view of society as centered in the state”. Through political organisations, norms are communicated and created; norms function as constraints and societal rules. While laws and directives can be established from political communication, political processes primarily imply compromises. The critical reflection of discourse

can help unveil processes of norm-setting and normalization processes [26]. While we do not differentiate between the two processes, both have taken place already in regards to sustainable development [27]. Acknowledging that there is a difference, we want to examine the discourse around the UN communicated norm of sustainable agriculture, as part of the sustainable development discourse. The novel aspect of sustainable development, since 1987 [28], is the integrative character of 'development politics'. The concept includes social, ecologic, and economic aspects as well as considerations of interconnections of these aspects. The violation of human rights, as manifested in international law, can be seen as the bottom line or the exclusion criterion of a sustainable state [29].

While the role of international politics is to popularise and solve development issues through the normative framework of sustainable development, the scientific discourse has a different role regarding sustainability and regarding society in general. As Kuhn [30] (p. 1) argues, "science is the constellation of facts, theories, and methods collected in current texts", and contributing pieces to finding truth(s). The science of sustainability should thus consist of facts, theories, and methods, and the processes of exploring the field of sustainability. Or to put it in more discourse theoretical terms, science has always interpreted social reality based on the background of culturally influenced knowledge. The objective is to come close to the 'order of truth', which includes the revealing of power constellations of discourse contents and stakeholders [31]. A common understanding or paradigm can then be interpreted as a sign of the maturity of a scientific discourse. As Fernandes and Philippi [32] have noted, with sustainable development or sustainability issues, the two discourses, the scientific and the political, are highly interconnected. We therefore examine not only international political discourses and the interests behind, but show the scientific perspective on sustainable agriculture as well. Our interest is especially to explore which topics the international political and scientific discourses highlight and how they might differ. This can give us indications on the discourse positions and the interests of the two stakeholder groups in regards to sustainable agriculture.

3. Methodological Approach

'Discourse', in the Foucauldian tradition [33], refers to the entirety of constructed reality. One central goal of discourse analysis is hence the representation of knowledge that is articulated as if it depicts the 'truth' [31], which we attempt to do in this manuscript. These representations are often examined linguistically. However, a broad strand of social scientists has emerged, utilizing particularly critical discourse analysis to describe the phenomena of power ascribed to the specific knowledges and claims of discourses [31]. The de- and reconstruction of discourses allow us to analyse both the elements of the discourses (what does sustainable agriculture mean in these discourses?) and to identify popular discourse topics, as well as the positions of the major political stakeholders towards these discourses (Question 1). As a discourse always represents a construct and thus only part of reality, we wanted to show another perspective, and chose to describe the key elements of the scientific discourse, in comparison (Question 2). From this comparison, we were able to find common elements and differences that helped to answer the question on the social dimension of sustainable agriculture. For the political discourse analysis, we made the following assumption based on the literature [16,34]: Sustainable agriculture in the political arena is often connected to the ideas of sustainable development or sustainability. Because the Brundtland definition of sustainable development is still the most cited definition, we assumed that the UN and UN-related organisations have influenced the meaning of sustainable agriculture, and we therefore analysed milestone UN documents related to the concept of sustainable development, from 1972 until 2015.

We chose critical discourse analysis (CDA) as it constitutes a special form of discourse analysis that not only focuses on the contents of a discourse, but also critically reviews the discourse positions and underlying power structures [31,35]. Our analysis followed Jäger's proposed framework [31] and was structured into a pre-analysis, a structure analysis, and a subsequent detailed text analysis. From the pre-analysis of documents, we already made some assumptions: We found that the UN conferences on 'sustainable development' represent milestones in a common understanding of sustainable

development and sustainable agriculture, gained through extensive political negotiation processes. However, several specialized UN bodies are primarily associated with agriculture [36], including the Food and Agriculture Organization of the UN (FAO), the International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP). Hence, we included discursive events, such as conferences hosted by the FAO, strategic documents (e.g., strategic frameworks, mission and vision statements, and websites) of all three UN bodies as well as their websites. Documents of the UN and FAO conferences were regarded as important if they related to 'sustainable development' in terms of the title, chapter title, or as a significant part in another way, and if they contained topics connected to agriculture. Documents of all UN bodies beyond the conferences were then considered as important if content was explicitly related to sustainable agriculture. The pre-analysis therefore meant choosing adequate materials and screening them on their comprehensiveness. For the structure analysis, the documents were analyzed in full, except for those parts that would most likely not contribute directly to the understanding of sustainable agriculture, such as chapters exclusively on matters like global marine issues. The structure analysis consisted of the in-depth examination of both document elements and the overall argumentation of single documents: According to the propositions of Jäger [31], we identified statements that related to sustainable development, agriculture, and, if available, to sustainable agriculture. The statements were always regarded in their respective discursive context. The statement contents and contexts were collected in the form of themes and sub-themes. These were noted and reappearing themes were extracted. The reappearing topics we called discourse elements. We connected the discourse elements throughout all documents and documented how the overall emphasis of the discourses shifted over time. The reappearance of actors and their emphasis on certain discourse elements could also be identified, and their interests were critically interpreted. The detailed analysis included the re-examination of typical documents for those reappearing discourse elements and themes. Text passages were chosen that characterized the topics well and the institutional, rhetoric, symbolic, and ideological contexts were determined [31]. The aim of this step was to take a step back from the overall discourse pathways and review whether single text fragments actually confirmed or rejected the statements and the discourse themes and to determine the importance of topics within the texts. Due to the extensive amount of work, the documents were only examined by one author. However, feedback on and discussions of each resulting step took place.

As the statements of the discourse analysis were quite specific, we wanted to examine whether other discourses construct sustainable agriculture differently. Through a scientific literature review (qualitative content analysis according to Mayring [37] and Mayring and Fenzl [38]), we could identify central discourse elements and compare these to the ones found in the international political discourse. While this task has been done by other authors [12], for us, it was particularly important to be able to trace back the ideas of sustainable agriculture within their contexts. There are plenty of ways to frame sustainable agriculture. However, for the results to be comparable, we had to utilize the same keywords for the same phenomena. Hence, we did not utilize data from already existing studies. Instead, the scientific articles were chosen qualitatively through a Google Scholar and Web of Science article search with the keywords, 'sustainable agriculture' and 'agricultural sustainability'. While numerous articles were available for these search terms, only articles that included at least an explanation of what sustainable agriculture meant were utilised. Concepts, such as 'resilience' or earlier references to the fragility of agro-ecosystems [39], are often closely connected to the topics that sustainable agriculture covers. Due to our search for the meaning of 'sustainable agriculture', we could not consider those. The data collection was concluded once the same topics kept reappearing. After identifying discourse elements by means of the qualitative content analysis, the topics were attributed to themes with similar meanings in relation to sustainable agriculture [37,38]. At this point, we started comparing the elements and themes of the scientific discourse with the ones established in the UN discourse. There were elements and topics that the political discourses did not contain and those they highlighted more. Overall themes were found that could describe several directions of scientific research discourses on sustainable agriculture. This means, however, that the representation

of the scientific discourse was not critically reflected upon in terms of different stakeholder groups and their interests, but only on an aggregated level ('all of science'). Also, we represented the scientific discourses in reference to the international political discourse. Another outcome could have been possible, if we evaluated both discourses independently, or if we utilized other scholars' data, such as the one by Velten and colleagues [12]. However, one of our goals was to show potential strengths or gaps of the international political discourse, on the discourse element levels, where the social dimension of sustainable agriculture can be examined. An extensive actor analysis of all scientific authors and their institutional relations was found to be not necessary.

4. Results

The following section shows the results of the discourse analysis of the international political discourses, followed by the scientific ones. Due to the high amount of materials analyzed, we only represent the most remarkable results and observations. These will be discussed critically in the subsequent chapter. Some indications of power manifestations within the discourses will be demonstrated.

4.1. The International Political Discourse

One of the most remarkable findings of the discourse analysis of the international political discourses was that the concept of sustainable agriculture is often missing in the UN conference documents, particularly from 1980 until 2000. The declaration of the Millennium Development Goals (MDGs) [40] highlights food security, thus bringing food production and sustainable agriculture back on the agenda. The focus on poverty- and hunger-related problems peaks with the hunger crises in many developing countries around 2008 [41,42]. Thus, food security issues often dominate over issues of sustainable agriculture and environmental factors. After 2010, and the acknowledgement of failures of achieving several of the goals set in 2000 [42], the new framework of sustainable development, the SDGs [1], revived sustainable agriculture.

When explicitly addressed in UN documents on sustainable development [1,43–45], the overarching goal related to sustainable agriculture is to combat hunger through increased food productivity. Particularly from 2005 onwards [1,42,45,46], agriculture is often mentioned in connection to one of the most common topics, the eradication of hunger, after 2010 in terms of the 'right to food' (e.g., [45]). The goal of food security, however, is much broader than sustainable agriculture. Agriculture within this context is addressed by two different lines of argumentation that have not been consolidated. The first goal is the sustainable intensification of production [1,41–43,46]. The second (and somewhat contrasting) goal is to achieve food security at the global and household levels [1,28,41,42,44,45]. The idea behind sustainable agricultural intensification, according to the UN conference documents, is mainly increased resource efficiency, hence to achieve increased outputs with reduced inputs. Technologies, such as biotechnologies or other resource-efficient technologies, are generally presented as the solution to negative impacts on the environment. Scholars, such as Loos et al. [21] and Struik et al. [47], have doubted whether this increase of outputs (i.e., foods) while reducing inputs (fertiliser, energy, and water) is actually achievable. The second major topic, food security at the household level, is supposed to be solved through the transfer of knowledge and technology and the empowerment of the rural population, e.g., by creating more market access. However, the second discourse is only partially relevant for the agriculture sector. Typically, food security is addressed for all rural inhabitants, and only sometimes are poorer, less educated farmers specifically addressed. Topics specifically relating to agriculture are improved or more stable harvests and incomes, secure food and income, and access to political participation and markets. How exactly these goals should be achieved, besides from governmental directives and campaigns, is not mentioned in the political documents.

When examining changes in the discourses over time, one interesting aspect is the change from the 1970s to today that has occurred in terms of the role of agriculture within the

environment. While agriculture was previously depicted as being incompatible with environmental management [48]—and even as being responsible for a large part of the ongoing damage to the environment—increasing numbers of ideas have been voiced that integrate both agricultural production and environmental conservation, such as conservation agriculture or agroecological practices (e.g., [1,43]). In earlier documents, such as the documents of the UN Conference in 1992 [43], biotechnology is mentioned mainly as a means to increase production or sustainable intensification. Recently, to choose one example, genetically modified plants that reduce the pesticide use through pest resistances have been presented as environmentally friendly alternatives (e.g., [49]). Another noticeable change has occurred for food security: In documents around 2000 (e.g., [41]), the concept is discussed as an economic measure of national incomes related to the unequal distribution of food over the globe. Especially since the common insight is that the MDGs generally failed to achieve their goals, this discursive line of argumentation has changed strongly towards more differentiated ideas, such as food access for everyone and the right to food (e.g., [1,45,50]). While agricultural smallholders, such as small-scale family farmers, are barely mentioned in the earlier documents, they have gained importance, especially regarding issues of local food security (e.g., self-sufficiency and food for local communities) [45,50,51], various aspects of social justice (e.g., access to markets and political power), cultural rights, and rights of minorities [1,45].

The documents and webpages of the three main UN-related bodies concerned with agriculture reflect some of the findings above: Small-scale farmers have become the most addressed target group (e.g., [50–52]). Environmentally friendly practices are now promoted, especially in terms of climate adaptations (e.g., [50–54]). Within the discourse of agriculture-related UN bodies, however, the sustainable intensification approach retreats somewhat to the background.

One observation along the discourses is the vagueness of the ideas of sustainable agriculture. For example, only one of the three examined organisations, the FAO [55] (p. 12), has a clear definition of what sustainable agriculture actually means: “Sustainable agriculture conserves land, water, and plant and animal genetic resources, and is environmentally non-degrading, technically appropriate, economically viable, and socially acceptable”. While the principles derived from this definition are much more detailed than the overall UN discourse, they include the same topics. However, concepts, such as ‘social well-being’, ‘livelihoods’, and ‘equity’ [55], are extremely open and leave some room for interpretation.

Another observation is the lack of a particular target group for sustainable agriculture. While the food security discourse clearly addresses small-scale farmers, it is left open who is supposed to intensify production. The FAO, the IFAD, and WFP [50–52] essentially only address poor rural inhabitants, small-scale and family farmers, and governments in developing countries.

The following may be summarised for the three dimensions of sustainable agriculture in the United Nations’ discourse complex. The economic dimension (cf. Table 1) can be viewed as central. The political consensus is that food production has to be increased in order to feed the growing world population. Over the last two decades, however, insights have slowly emerged that economic growth or production growth in agriculture alone will not solve all problems. People are therefore being addressed more and more within the topic of sustainable agriculture. However, these developments mainly play a role related to consumption (cf. Table 1, ‘food security’): Hunger, food access, nutrition, and food quality. The major target group in agriculture are family farmers who are at or below the poverty line and poor rural inhabitants who have limited access to food and other resources. This picture is delivered directly through the UN political realm, which primarily focuses on development issues, such as the fulfilment of basic rights, participation, and enhancing poor livelihoods. In consequence, the social dimension of sustainable agriculture is predominantly concerned with developing countries and human rights, which partially explains the lack of an environmental dimension (or its vagueness) within the political discourse of sustainable agriculture. The fact that the ecological dimension, or environmental protection, is not concretized in relation to sustainable agriculture, confirms that it is not the focus area for the UN. Political stakeholders prioritize

the well-being of their respective economies and people, international politics, and development issues. Where rural people lack access to basic rights, such as food, the anthropocentric norm of the UN and political parties puts people first and the environment second. However, people who are above the poverty threshold are rarely addressed, which then leaves a gap in the connotation of sustainable agriculture as being fairly development-oriented. The food security discourse does not show what ‘socially sustainable conditions’ should look like for the broader agricultural sector. Additionally, while the SDG indicators for measuring progress towards sustainable agriculture mention all three pillars, what exactly sustainable agriculture means is determined through the meta index of the ‘proportion of agricultural area under productive and sustainable agriculture’ [56]—which leaves the concept open to interpretation, again. As the UN General Assembly [56] (p. 10) states, “The measurement instrument—farm surveys—will give countries the flexibility to identify issues related to sustainability that are most relevant to priorities/challenges within these three dimensions”.

Table 1. Central discourse elements, aggregated in themes (organizations are named when the topics are specifically supported by them).

Environmental Categories	Economic Categories	Social Categories	Other
Environmentally safe practices	Productivity	Food security	Governance
Environmental protection	Production growth	Participation and rights e.g., human rights, equity	Extension/training/research
Protect resources e.g., genetic diversity	Intensification	Small-scale farmers	Resilience (FAO, IFAD, WFP)
Sustain natural resource (FAO) e.g., biodiversity	Market access	Livelihoods	Intergenerational aspects
	Investments in agriculture	Food safety and quality	
	Biotechnologies		
	Resource efficiency (FAO)		
	Diversification (FAO)		
	Business viability		

The table below (Table 1) summarizes the themes that reappeared throughout the documents, according to the three-pillar model of sustainability. They represent the contents associated to and contexts of appearance of sustainable agriculture by the UN and the UN associated organizations. These are hence already aggregated themes. ‘Governance’ was added as an extra dimension that considers aspects not directly related to one of the classic three pillars.

4.2. Sciences and Sustainable Agriculture

In contrast to the political discourse, the scientific discourse tends to emphasise issues of environmental management and protection within the agricultural sector. The historical development is interesting in this regard: The scientific discourse on agriculture before the 1980s largely focused on how to improve productivity in accordance with the paradigm of the Green Revolution, a phenomenon describing the increase of productivity in order to cover increasing food demands [57]. “It was believed that foreign aid and developed technology would inevitably (and rapidly) replace traditional, stagnant subsistence cultivation, freeing the poor and ‘underemployed’ rural masses for the urban industrial sector” [58] (p. 21f). With the change in the political agenda during the 1980s, however, environmental issues became the core of sustainable agriculture and the short-term goals shifted to long-term goals [59], thereby acknowledging the environmental downsides of, for example, large-scale mechanisation and land conversion. The scientific discourses took a turn towards environmental

sciences while maintaining a certain degree of productivity and profitability, instead of the other way around [11,47]. This focus on protecting natural resources and ecosystems remains until today [7,59], as confirmed also by the majority of articles connecting sustainable agriculture to environmental issues. Environmental protection in agriculture therefore represents one major strand of articles: The predominant lines of argumentation include ecological or ecosystem approaches to agricultural areas, such as studies on soil quality [60,61] and nutrient management [62,63]; environmental best agricultural practices, such as conservation agriculture [64,65], (eco)agroecology and agroecosystems [66–68], agrobiodiversity and agroforestry [69,70], low-input agriculture [7,71], alternative fertilization [72], and, finally, plant protection methods [73] as well as improved resource management (such as of energy and water) [60]. While often not directly connected to sustainable agriculture, resilience approaches to agriculture are a closely related topic.

One remarkable observation in this context is that some authors speak of alternative farming practices as ‘technologies’ or ‘technological innovations’ [74,75] and describe these practices as the solution to the environmental degradation problem. This idea represents a strong contrast to the political discourse, where the term, ‘technologies’, is rather associated with production methods that enhance production output of industrialized farms, for example, a high degree of mechanisation. However, technology is developed for both purposes: To increase productivity and economic growth and also to spare environmental resources [7].

A second line of argumentation within the scientific discourses, primarily supported by economists, views the goal of the sustainable agriculture concept as sustainably productive agriculture [8,76]. This includes both scholars working on sustainable agricultural intensification [20–23] and those utilizing a different terminology. The policy goal of sustainable intensification is connected to this meaning, or the “call to increase food production from existing farmland in ways that place far less pressure on the environment and that do not undermine our capacity to continue producing food in the future” [22] (p. 33). While the goal for many years was simply to increase production and productivity [15], today, sustainable agriculture is often associated with short- and long-term farm profitability, resource sufficiency [77], and ways of reducing rural poverty [78]. The typical solution is to further intensify and decrease environmental effects through the introduction of new technologies and technology transfers [79]. These technologies include climate-adapted agricultural practices that can balance production with extreme climate challenges [80]; biotechnologies, such as nanotechnologies; genetically modified plants, such as drought and pest resistant crops with higher yields [81,82], and more. While the scientific discourse contains various ideas of how to solve economic problems on a local scale, we could find no comprehensive concept on how environmental damages might be decreased on a global level while simultaneously intensifying production and increasing food output. Garnett and Godfray [83] (p. 25) even argue that these concepts can only be established locally. However, they also acknowledge that “the twin goals of delivering yields high enough to remove the ‘need’ to encroach further on uncultivated land at the global aggregate level (. . .) in ways that optimise the use of non-renewable inputs, and do not cause environmental damage (. . .) will not always be possible and tradeoffs are inevitable”. Hence, the goals of productivity and environmental protection seem to contradict one another. Also, the desired outcomes of economic investments in the farming sector have sometimes failed to show the promised positive effects on rural development, as, for example, Dorward [84] shows for the case of increased grain prices and decreased benefits of agricultural workers.

A more integrative and participatory form of the sustainable agriculture concept has increasingly been utilised in recent years [85], representing the third discursive pathway in this chapter. Because the social dimension of sustainable agriculture (such as living and working conditions) is particularly dependent on the local background, the inclusion of everyone involved in various decision-making processes is increasingly seen as being important and participatory or collaborative learning processes have been promoted as a result [86]. The foundation of this approach lies in the finding that smallholders and people in rural areas are neglected in several ways. They have less access to

resources for farming and have more vulnerable living situations (e.g., income and nutrition that depend on weather and ecosystems), although their environmental impact is quite low in comparison to the industrial agriculture sector. Several subordinate pathways may be differentiated for this topic, including vulnerable people [87,88] and access to means of production [89,90], extension services for farmers [7,78] and collaborative learning [91,92], and, finally, broader topics, such as quality of life aspects [88], livelihoods [93], food security aspects, traditional life aspects, and cultural institutions [77].

The table below (Table 2) summarizes the findings above and gives an overview of themes connected to sustainable agriculture, categorized within the triple bottom line. An aspect that could not be categorized within the sustainability tripartite is the consideration of long-term conditions and the consideration of future generations—simply because it refers to the topics in all three dimensions.

Table 2. Central elements of the scientific literature, aggregated into themes (several attributions possible).

Environmental Themes	Economic Themes	Social Themes	Other
Maintaining environmental stability e.g., agroecosystems	(Sustainable) Intensification	Smallholders and family farming	Temporal or intergenerational aspects
Environmentally-sensitive practices e.g., conservation practices	Resource efficiency	Farmer knowledge and skills	
Resource protection e.g., soil protection	Agricultural profitability	Labour conditions	
Regenerate/improve the environment e.g., agroecology	Market access	Wellbeing of people in agriculture	
	Food sufficiency	Participation and rights	
	New technology	Community impact	
		Societal transformation	

Summarizing the findings of the three dimension of sustainable agriculture in the scientific discourse, it is interesting that the discourse elements vary strongly. This can be traced back to scientists' different backgrounds that lead to a variety of meanings of sustainable agriculture. Environmental aspects that influence and are influenced by agriculture represent the majority of articles related to the sustainable agriculture concept. While a few studies exist in the literature on the enhancement of farm productivity at the country- or international scale, the majority of articles do not focus specifically on economic viability aspects. If they do address this aspect, the topic is mostly connected to environmental considerations. For the social dimension of sustainable agriculture, similar topics are covered as in the political discourse: Justice, empowerment, small-scale farmers, and neglected groups; large-scale farms thus are often not addressed in connection with the sustainable agriculture concept. Overall, the majority of the agricultural science discourse focuses on individual sub-aspects of sustainable agriculture. In comparison, few studies address the global level and even less contribute to combining already existing knowledge with a more comprehensive sustainable agriculture concept. The focus instead appears to lie on finding local solutions to local problems.

5. Discussion

The discourse elements clearly establish that a variety of discourses exists on the meaning of sustainable agriculture. We call the three main discourses 'sustainable development in agriculture', 'sustainable agricultural intensification', and 'environmental management in agriculture'. Each is discussed below.

5.1. Discourses and Discourse Positions

Sustainable development in agriculture refers to the overarching paradigm of food security. The central idea is that farmers in developing countries need to be supported to produce more while, at the same time, fulfilling their own needs. Food security is generally claimed on two levels: (1) Universally, meaning that farm productivity must be increased in places where it is currently low to feed a growing world population; and (2) at the household level, thereby addressing in particular small-scale family farmers who are paradoxically unable to feed their families with their produce and the incomes they gain from agriculture (e.g., [94]). However, food security, as predominantly shaped by the UN and UN bodies, only secondarily addresses agriculture. While securing a stable income for farmers is the precondition for global food security and is therefore widely considered to be equally as important, the more central motive for the consideration of agriculture in this context might be the UN's increasing call for human rights. Human rights policies were introduced in the 1940s and 1950s [95] and were signed by many countries, although these policies have yet to be implemented worldwide. For agriculture, the related human right is the 'right to food', as authors, such as Mechlem [96], confirm. The spotlight has thus been directed towards developing countries and 'neglected' and 'vulnerable groups'. However, when considering the diversity of farming systems worldwide, aspects beyond the fulfilment of human rights and basic labour rights, such as decent working conditions according to the International Labour Organization (ILO), must be considered. The discourse therefore particularly leaves a gap when trying to explain what sustainable agriculture can mean for medium- and large-scale farmers and in places where human rights are not violated. This gap is also not covered by scientific stakeholders who examine smallholders and their access to basic institutions, such as human and cultural rights, justice-related aspects, and political participation. Sciences, however, can bring the discourse forward in examining practically and theoretically what small-scale farmers in developing countries need in order to achieve more sustainable agriculture. At the moment, the international political and scientific arenas thus appear to treat sustainable development in agriculture as a minor discourse, overpowered by the food security paradigm of international politics and the environmental protection paradigm of the agricultural sciences, which we will explain later. However, this phenomenon is not limited to international politics and is affirmed by food movements [83] and the private sector claiming to contribute to food security, as a quick glance on the web pages of large agricultural players, such as Bayer, confirmed.

The discourse of sustainable agricultural intensification is legitimised through the same paradigm as the discourse on sustainable development in agriculture, the food security paradigm. While the latter discourse focuses on small-scale agriculture (and rural inhabitants) in developing countries, the sustainable agricultural intensification discourse is more abstract in terms of addressing people. Sometimes smallholders are mentioned regarding the possibility of production increases, since they play a major role globally, in terms of sheer numbers [97]. The major concern, however, is simply to increase production to a level where all people on earth can be fed (e.g., [1,43–45]). Although the way to reach that goal is not yet clear, the two discourse stakeholder groups have made several proposals, which is where the discrepancies within (as well as between) the discourses start. International politics promise the global exchange of knowledge and technologies through research institutions and businesses (e.g., [1,42–44,50,51]); the 'how' is not concretised. Programmes initiated through the various UN bodies focus on local case studies that support market access and environmentally friendly ('climate-resilient') practices, amongst others (e.g., [50–52]). While research is involved in these developing programmes (ibid.), as sponsored by international political and private actors, larger shares of financial resources are more likely to be invested in studies that contribute to improving large-scale farming practices in the global North where suitable infrastructure and financial resources are more available. Programmes in the global South, in contrast, are often funded by national and international development funds, thus limiting the thematic scope, time, and resources of such programmes. The private partners whom the UN attempts to motivate in terms of knowledge exchange with the global South (e.g., [1,51]) often develop new ideas with research institutions in the global North or

in their internal research departments (e.g., [50,51]). The technology developed by private firms is thus often far from the agricultural reality of small-scale farmers in the global South. At the same time, sustainable agricultural intensification is sometimes understood as consisting of environmentally friendly technologies (e.g., [49]). Some practices are based on the premise that intensifying already available agricultural practices would globally lead to more benefits than potentially extending these already used areas in order to increase food production [83]. Scientists also examine alternative practices, such as agroecological methods [66,67] and conservation agriculture [64,98], as forms of more environmentally compatible agriculture. However, this work is usually not attributed to the sustainable agricultural intensification paradigm and does not aim at the global intensification of production. Finally, the underlying assumption of producing more outputs with less inputs, has been questioned. Scholars, such as Garnett and Godfray [83], who have noted this discrepancy in the past, have traced back the underlying values to the still remaining economic growth paradigm of the UN approach and discuss the rethinking of this paradigm. The focus of the international political agenda should instead shift towards the quality of growth rather than 'ever-increasing production output' and to questions of distribution and access [21].

The discourse position of the agricultural intensification discourse is interesting in terms of the participation of politics and sciences. While neither sees the intensification concept as the centre of the sustainable agriculture concept, a broad body of research has developed around the concept of sustainable agricultural intensification [20–22,47,79] and what such intensification should mean. Various UN bodies have initiated programmes that can be associated with the discourse, such as programmes raising the productivity of small-scale farmers [50–52]. So, while the discourse does not receive a great deal of attention according to sustainable agriculture, it does seem quite relevant for both discourse stakeholder groups.

The third major sustainable agriculture understanding is primarily reflected by the scientific discourse arena. During the 1980s, it became clear that the Green Revolution had led to several serious environmental problems that would both drastically decrease the quality of agricultural areas and lead to severe productivity decreases [47]. A new paradigm has been established in the field of agricultural sciences since that time. While policymakers have turned away from 'agriculture and the environment', several environmentally focused approaches could be established [64–66,69,71,98–100] as part of what we call the environmental management in agriculture discourse. Although the discourse contents vary from alternative practices to local nutrient management, all have one thing in common: Thus far, no one-size-fits-all approach could be established that balances the central problems of agriculture over the globe—namely, protecting the environment and balancing profitability. Many approaches have been established, however, at the local case-study or subject-specific levels. One reason for the lack of a comprehensive concept could be that the environment can be seen as a secondary goal of the UN discourse on sustainable agriculture, following the overpowering normative argumentation that poor and hungry people must be considered first. This is also indicated by the fact that the documents rarely regard the environment as essential for sustainable agriculture. The central objective of international politics is the well-being of the member states, and within these states, the objective is the well-being of the societies within. The environment is hence mainly important in its role as the basis of human life and regarded as a resource for people, which needs to be maintained for future generations. Because the 'right to food' has yet to be adequately implemented, the environment only ranks second, especially in the global South. At the same time, in those countries of the global North where the social problems are less obvious (and perhaps less grave, although that is debatable), the environment plays a central role. However, the thematisation of the interconnections of environment and agriculture primarily takes place in the international scientific arena (or in local politics), since international politics focusses on the developing countries. One problematic aspect is that this discourse development can lead to overlooking major environmental (i.e., sustainable agriculture) issues in the global South and social issues in the global North.

When comparing the goals of the three discursive pathways, some conflicts can be shown: With the political sustainable agricultural intensification discourse in mind, it appears almost paradoxical that a part of the scientific discourse (e.g., [66,68]) highlights the environmental benefits of small-scale farming practices in the global South and presents them as the solution to farming in an environmentally compatible way. This representation conflicts strongly with idea of sustainable agricultural intensification of the UN (e.g., [1]), in which everyone's well-being is connected to productivity increases by means of specialisation, larger production sizes, and economies of scale [19]. Even more so, the notion of environmental compatibility of smallholders conflicts with the picture of the poor and neglected small-scale farmers of the global South, who are unable to feed their own families—which the UN and UN associated bodies [1,43,44,50,52] have depicted in the discourse on sustainable development in agriculture. Sustainable development for these smallholders would likely mean aiming at increasing their living conditions at any costs (also environmental ones). Identifying the practices of those smallholders as positive who manage their production systems in environmentally friendly ways because they simply lack access to technology and other productivity enhancing inputs hence seems not only paradox, but far from the idea of sustainability as benefitting the needs of all.

5.2. Discourses and Power Asymmetries

When comparing the three discourses, it becomes clear that the objectives are as different as the interests of the discourse stakeholders, international politics, and sciences: The discourses can be interpreted as a manifestation of power asymmetries between the global North and the global South, as explained in this section. Discourse theory implies that power is only possible through knowledge. Critical discourse theory therefore wants to show the power effects of the explicitly voiced knowledge, in order to identify potential gaps and shortcomings and the acceptability of the knowledge-power complex [31]. The following power structures can be associated with the discursive fields we identified: The sustainable development discourse takes place primarily in the global South, and the major interested parties are international politics and the countries of the global South. The major topic regarding food and agriculture is food security, represented mostly in development issues of the global South. For sustainable agriculture, there are only thematic overlaps: Namely, for the living and working conditions on poor small-scale or family farms. While this discourse of food security and human rights on the first glance seems to be the primary goal in the food and agriculture discourse, the two other discourses seem to be more actively addressed in practice, for example, in programmes of the IFAD and the WFP [51,52]. 'Agricultural intensification', the discourse that influences several of these programmes, incorporates inherent capitalist values, such as the increase of outputs while minimising inputs. Therefore, it influences research and private sector action in areas where these values are already adapted and where the required infrastructure is provided, such as in large-scale agriculture of the global North—instead of where it is needed, according to the UN. In the global South, governmental, non-governmental, and private funds are usually utilised to work on local issues related to living and working conditions in agriculture, therefore, attempting to alleviate the gravest cases of poverty. These observations imply that the practical implementation of the intensification discourse primarily takes place in the global North, and the power asymmetries that have been re-created through the global capitalist system are reinforced. Developing countries are indeed interested in private business collaborations in terms of taxes, job positions, training, and investment in infrastructure. However, private partners are often still hesitant [57]. Where these forms of collaborations have been achieved, private businesses do not necessarily consider environmental and social conditions, but mostly (long-term) profitability. This leads to the localization of the environmental discourse primarily within the scientific community. When it is only promoted through this community, however, large-scale changes towards more environmentally friendly agriculture are not likely. We see its implementation particularly critical, because the picture that part of the scientific community draws, that environmentally friendly small-scale farming is the solution to

the environmental damages caused by industrialised production methods (high inputs and outputs, large-scale, specialized production systems), conflicts strongly with the international political goals. The international political discourse underlines high output production methods as being positive and increases in productivity for small-scale farmers through market access and training are seen as solution to smallholders' problems, such as poverty and lack of food access. Concluding shortly, this means that the environmental paradigm of 'small-scale farming in accordance with nature' cannot align with the development and the intensification paradigm that aims at market participation and economic growth of small-scale farmers—which, finally, is supposed to increase food production and output to be able to feed the globe. While some methods (e.g., [66]) might have proven increased efficiency with reduced inputs, there is no globally applicable strategy yet to strongly increase outputs without the utilization of fertilizers and/or other mineral-based inputs. Although smallholders are often presented as the centre of the political discourse (and large-scale agriculture is indeed mentioned much less), within the economic growth paradigm, they play a role as recipients of finances, such as training programmes and aid, but lack decision-making power. The IFAD finds on its website [101] that 'the success and sustainability of IFAD's development efforts depend on the design and implementation of policies and investments that enable inclusive and sustainable rural transformation'—therefore, tracing the success of sustainability in agriculture back to the financial contributions of UN member countries and private businesses. However, these are often private partners and governments of the global North, therefore, indicating a strong power asymmetry determining the future (sustainability) of agriculture.

5.3. Problems and Solutions for Understanding Sustainable Agriculture

From our analysis, several problems and solutions can be deduced: The political arena, for one, has increasingly taken up the term 'sustainability' to justify various actions. This applies to several political fields, including agricultural politics [11]. Agriculture varies markedly across the globe; therefore, a one-size-fits-all solution for sustainable agriculture, or sustainability in general, cannot be found [22]. Similar to the phenomenon of green-washing in the private sector [102], there is a risk that politicians will simply use the concept of sustainable agriculture without actually changing anything to achieve more 'sustainable' agriculture. At the moment, the UN provides the overall objectives of sustainable development [27], often simplified as sustainability [103]. The member states follow these ideals and implement strategies. Hence, the UN frames the concept of sustainable agriculture as implemented in national politics.

A second problem is represented by the fact that the three discourses show major conflict potentials. While two of the discourses are often compatible, the third discourse is not. For example, economic incentives can support human development or environmental protection in agriculture, but both aims are not reached through the same measure. Or, in the opposite direction, while farmers have adapted farming systems in harmony with nature, their products are not typically suitable for a global trade system as the products would be quite diversified. The incompatibility of these discourses can be partly traced back to the underlying ethical perspectives: While the UN stands for an anthropocentric worldview, environmental scientists assign a certain inherent value to the environment and "thus, competing social values and normative interests are at the heart of the issue" [47] (p. 86). The international political discourse aims to achieve development politics and therefore focuses on economic growth and human rights [20,67]. This leaves an open space for national politics to call agriculture 'sustainable' where human rights are not neglected.

The third issue we found was the lack of an understanding of how the social dimension of sustainable agriculture could be implemented better in the scientific discourse. The scientific discourse often equals sustainable agriculture as environmentally compatible agriculture. Some scientists therefore emphasise the intrinsic right of the environment. Doing so often leads to neglecting discrepancies with the profitability and social conditions of the farms. An overarching idea of what the concept of sustainable development means for agriculture is still missing—in particular, for the social

dimension. Other disciplines have advanced this sustainability dimension already in the contexts of their research, e.g., [104,105]. Transferring these frameworks to agriculture and including both small- and large-scale farmers would imply a major opportunity. In this case, the social embedding of farms should also play an important role for social sustainability [11]. The collaboration of the international political and scientific discourse stakeholders is central in this regard. Only by integrating all actors who are concerned within agricultural systems equally, and by finding solutions to conflicting goals, can sustainable agriculture be implemented. This is especially central for the social dimension since values differ individually and geographically [106]. Power asymmetries can only be addressed if the concerns of everyone are included, as Cheney and colleagues [107] (p. 244) confirm: “Commitment to the values and viewpoints of competing interests can help to redress unequal power relations and ensure that decisions and findings will be appropriate to local contexts”.

While our study was able to show some overall limitations regarding the contents and interests of the discourse stakeholders, much still needs to be done. The international political discourse cannot consider all individual interests and conflicts related to the meaning of sustainable agriculture in its member countries; it can only provide a direction. The sustainability concept is a highly normative idea, as Frantzeskaki et al. [106], for example, have argued, and the concept must be left open to some extent, in terms of potential local adaptability. As a result, only obvious discrepancies of the two discourses could be shown in our study. Finding a detailed perspective and concrete solutions are only possible for practical cases. Furthermore, only a limited number of international organisations could be evaluated in this project; it would be interesting to see where other international organisations, the private sector, and non-governmental institutions stand in terms of the concept of sustainable agriculture and which meanings they associate with that concept.

Finally, creating a consenting concept of sustainable agriculture will be difficult due to the two different (ethical) worldviews and obligations of international political and scientific stakeholders—especially when thinking about other discourse participants. When we consider that in developing countries, the UN sets the norms that research institutions should examine and implement, conflict is inevitable. However, with the participation of scientists within the discourses, the conceptualisation of sustainable agriculture can be both legitimised and also critically evaluated. In particular, discursive gaps should be shown. Our research represents one of the first attempts to do so in terms of the meaning of sustainable agriculture in the international political discourse.

6. Conclusions

The goal of this study was to determine the meaning of sustainable agriculture within the various political discourses, thereby emphasising the meaning of the social dimension of sustainable agriculture—or ‘people in agriculture’. We found that, after being underrepresented from the 1980s through the 2000s, sustainable agriculture has recently reappeared on the international political agenda. However, sustainable agriculture remains a subordinate concept in the prevailing food security discourse. Like our study, Johnson [18] and Constance and colleagues [19] found competing interests between the discourses. Two sub-discourses relate to the problem in terms of the role of agriculture: (1) The empowerment of small-scale family farmers to access markets and ensure sufficient income, and (2) the agricultural intensification discourse that, in contrast to prior economic premises, includes long-term and environmental thinking. The idea of how agriculture can be more sustainable is only superficially addressed within the political discourse. A gap exists in the environmental dimension and the well-being aspects of the people who live on and surrounding the farm. The meaning of sustainable agriculture therefore remains vague and is in need of clarification. As a result, a major strand of the scientific discourse focuses on one of these gaps of the political discourse. Several local solutions to the problem of resource overuse have been presented. Further, the scientific discourse addresses small-scale and family farmers as one of several vulnerable groups of rural inhabitants who need to be empowered. Economic aspects, in contrast, are somewhat less popular. If economics is addressed, the argument mostly concerns the long-term viability of the farm.

Therefore, one challenge remains: In order to gain a comprehensive understanding of sustainable agriculture around the globe, a need exists to relate both the social conditions and profitability aspects of farms in the global North to the concept of sustainable agriculture. Finally, an overarching idea of how to systematically combine all the proposed local measures and practices is still lacking.

In order to close the gaps of the discourse, especially in understanding what sustainable agriculture means, the sciences need to take action. One promising direction has already been initiated. Progress has been made, for example, in the interdisciplinary field known as sustainability sciences [108]: In particular, the integration of several dimensions of sustainability into conceptions provides hope that a more comprehensive and integrative paradigm of sustainability sciences will be created [109]. In our opinion, however, this integration should occur separately from the development politics dominated by the international political discourse. As politics and sciences fulfil different roles in society—politicians promote ideals through norms, scientists establish theories and methods to derive facts, such as social constructs—their approaches differ considerably. As the scientific support of development politics is still highly important to find solutions to development problems, these development study issues could be considered as sustainable development issues, while sustainability science could focus on the development of its own paradigm and the establishment of theories and methods beyond the geographies of the global South. If political issues are examined—and sustainability is often related to political issues—we should pay attention to the potentially diverging interests behind a political goal in order to attain a precise research question.

However, our plea for sustainability science goes beyond this: Considering that people are always at the centre of sustainability, all developments are based on anthropocentric values. People must therefore be included in sustainability definitions, conceptions, and assessments in the form of the social dimension of sustainability—if not put at the centre. Our findings confirm this need: While people who have been neglected in the past or who have endured human rights violations are increasingly addressed in regards to sustainable agriculture, all people who are affected by agricultural production must be considered. We argue that the concept of sustainable agriculture therefore must also consider actors of larger farms and the ones that have not been subject to human rights' violations. Otherwise, there is a risk that all these farms can simply be called 'sustainable' and the term becomes an empty phrase. For the creation of a vision or a 'Kuhnian' paradigm [30], a mature scientific paradigm of the sustainable agriculture concept, sustainable agriculture must represent all farm sizes and production systems everywhere, and beyond human rights.

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References

1. UN. *Transforming Our World: The 2030 Agenda for Sustainable Development*; United Nations: New York, NY, USA, 2015.
2. Van der Hel, S.; Biermann, F. The authority of science in sustainability governance: A structured comparison of six science institutions engaged with the Sustainable Development Goals. *Environ. Sci. Policy* **2017**, *77*, 211–220. [[CrossRef](#)]
3. Hugé, J.; Waas, T.; Dahdouh-Guebas, F.; Koedam, N.; Block, T. A discourse-analytical perspective on sustainability assessment: Interpreting sustainable development in practice. *Sustain. Sci.* **2013**, *8*, 187–198. [[CrossRef](#)]

4. Hopwood, B.; Mellor, M.; O'Brien, G. Sustainable development: Mapping different approaches. *J. Sustain. Dev.* **2005**, *13*, 38–52. [[CrossRef](#)]
5. Quental, N.; Lourenço, J.M.; Nunes da Silva, F. Sustainable development policy: Goals, targets and political cycles. *J. Sustain. Dev.* **2011**, *19*, 15–29. [[CrossRef](#)]
6. Quental, N.; Lourenço, J.M.; Nunes da Silva, F. Sustainability: Characteristics and scientific roots. *Environ. Dev. Sustain.* **2011**, *13*, 257–276. [[CrossRef](#)]
7. Pretty, J. Agricultural sustainability: Concepts, principles and evidence. *Philos. Trans. R. Soc. B* **2008**, *363*, 447–465. [[CrossRef](#)] [[PubMed](#)]
8. Thompson, P.B. Agricultural sustainability: What it is and what it is not. *Int. J. Agric. Sustain.* **2007**, *5*, 5–16. [[CrossRef](#)]
9. Norman, D.; Bloomquist, L.; Janke, R.; Freyenberger, S.; Jost, J.; Schurle, B.; Kok, H. The meaning of sustainable agriculture: Reflections of some Kansas practitioners. *Am. J. Altern. Agric.* **2000**, *15*, 129–136. [[CrossRef](#)]
10. Dunlap, R.; Beus, C.E.; Howell, R.E.; Waud, J. What is sustainable agriculture? An empirical examination of faculty and farmer definitions. *J. Sustain. Agric.* **1993**, *3*, 5–41. [[CrossRef](#)]
11. Allen, P.; van Dusen, D.; Lundy, J.; Stephen, G. Expanding the definition of sustainable agriculture. In *Sustainability in the Balance. Issues in Sustainable Agriculture*; University of California: Santa Cruz, CA, USA, 1991; Volume 3, pp. 1–8.
12. Velten, S.; Leventon, J.; Jager, N. What Is Sustainable Agriculture? A Systematic Review. *Sustainability* **2015**, *7*, 7833–7865. [[CrossRef](#)]
13. Hansen, J. Is Agricultural sustainability a useful concept? *Agric. Syst.* **1996**, *50*, 117–143. [[CrossRef](#)]
14. Yunlong, C.; Smit, B. Sustainability in agriculture: A general review. *Agric. Ecosyst. Environ.* **1994**, *49*, 299–307. [[CrossRef](#)]
15. Smit, B.; Smithers, J. Sustainable agriculture: Interpretations, analyses and prospects. *Can. J. Reg. Sci.* **1993**, *16*, 499–524.
16. Lélé, S.M. Sustainable development: A critical review. *World Dev.* **1991**, *19*, 607–621. [[CrossRef](#)]
17. Weil, R.R. Defining and using the concept of sustainable agriculture. *J. Agron. Educ.* **1990**, *19*, 126–130.
18. Johnson, R.B. Sustainable agriculture: Competing visions and policy avenues. *Int. J. Sustain. Dev. World* **2006**, *13*, 469–480. [[CrossRef](#)]
19. Constance, D.H.; Konefal, J.T.; Hatanaka, M. (Eds.) *Contested Sustainability Discourses in the Agrifood System*; Routledge: London, UK, 2018.
20. Mockshell, J.; Kamanda, J. Beyond the agroecological and sustainable agricultural intensification. *Int. J. Agric. Sustain.* **2018**, *16*, 127–149. [[CrossRef](#)]
21. Loos, J.; Abson, D.J.; Jahi Chappell, M.; Hanspach, J.; Mikulcak, F.; Tichit, M.; Fischer, J. Putting meaning back into 'sustainable intensification'. *Front. Ecol. Environ.* **2014**, *12*, 356–361. [[CrossRef](#)]
22. Garnett, T.; Appleby, M.C.; Balmford, A.; Bateman, I.J.; Benton, T.G.; Bloomer, P.; Burlingame, B.; Dawkins, M.; Dolan, L.; Fraser, D.; et al. Sustainable intensification in agriculture: Premises and policies. *Science* **2013**, *341*, 33–34. [[CrossRef](#)] [[PubMed](#)]
23. Pretty, J.; Bharucha, Z.P. Sustainable intensification in agricultural systems. *Ann. Bot.* **2014**, *114*, 1571–1596. [[CrossRef](#)] [[PubMed](#)]
24. Cocklin, C. Agriculture, society and environment: Discourses on sustainability. *Int. J. Sustain. Dev. World* **1995**, *2*, 240–256. [[CrossRef](#)]
25. Habermas, J. Three normative models of democracy. *Constellations* **1994**, *1*, 1–10. [[CrossRef](#)]
26. Link, J. *Versuch über den Normalismus. Wie Normalität Produziert Wird*; Westdeutscher Verlag: Opladen, Germany, 1997.
27. Holden, E.; Linnerud, K.; Banister, D. The imperatives of sustainable development. *J. Sustain. Dev.* **2016**. [[CrossRef](#)]
28. WCED. *Our Common Future*; Oxford University Press: Oxford, UK, 1987.
29. Langlois, A.J. Human rights: The globalisation and fragmentation of moral discourse. *Rev. Int. Stud.* **2002**, *28*, 479–496. [[CrossRef](#)]
30. Kuhn, T.S. *The Structure of Scientific Revolutions*, 2nd ed.; University of Chicago: Chicago, IL, USA, 1970.
31. Jäger, S. *Kritische Diskursanalyse. Eine Einführung*, 7th ed.; UNRAST Publishers: Münster, Germany, 2015.

32. Fernandes, V.; Philippi, A. Sustainability sciences: Political and epistemological approaches. In *The Oxford Handbook of Interdisciplinarity*, 2nd ed.; Oxford University Press: Oxford, UK, 2017.
33. Foucault, M. *Archäologie des Wissens*, 17th ed.; Suhrkamp: Frankfurt, Germany, 2015.
34. Binder, C.R.; Feola, G.; Steinberger, J.K. Considering the normative, systemic and procedural dimensions in indicator-based sustainability assessments in agriculture. *Environ. Impact Assess. Rev.* **2010**, *80*, 71–81. [[CrossRef](#)]
35. Bührmann, A.D.; Schneider, W. Mehr als nur diskursive Praxis? Konzeptionelle Grundlagen und methodische Aspekte der Dispositivanalyse. *Hist. Soc. Res.* **2008**, *33*, 108–141. [[CrossRef](#)]
36. Shaw, D.J. *Global food and Agricultural Institutions*; Routledge: Abingdon, UK; New York, NY, USA, 2009.
37. Mayring, P. Qualitative Inhaltsanalyse. In *Handbuch Qualitative Forschung in der Psychologie*, 1st ed.; Mey, G., Mruck, K., Eds.; Verlag für Sozialwissenschaften, Springer Fachmedien: Wiesbaden, Germany, 2010; pp. 601–613.
38. Mayring, P.; Fenzl, T. Qualitative Inhaltsanalyse. In *Handbuch Methoden der Empirischen Sozialforschung*; Baur, N., Blasius, J., Eds.; Springer Fachmedien: Wiesbaden, Germany, 2014; pp. 543–556.
39. Douglass, G.K. *Agricultural Sustainability in a Changing World Order*; Westview Press: Boulder, CO, USA, 1948.
40. UN. *United Nations Millennium Declaration*; United Nations: New York, NY, USA, 2000.
41. UN. *Committing to Action: Achieving the Millennium Development Goals. High-Level Event on the Millennium Development Goals*; United Nations: New York, NY, USA, 2008.
42. UN. *Keeping the Promise: A Forward-Looking Review to Promote an Agreed Action Agenda to Achieve the Millennium Development Goals by 2015. High-Level Plenary Meeting*; United Nations: New York, NY, USA, 2010.
43. UN. *Report of the United Nations Conference on Environment & Development*; United Nations: Rio de Janeiro, Brazil, 1992.
44. UN. *Report of the World Summit on Sustainable Development*; United Nations: Johannesburg, South Africa, 2002.
45. UN. *United Nations Conference on Sustainable Development*; United Nations: Rio de Janeiro, Brazil, 2012.
46. UN. *2005 World Summit Outcome*; United Nations: New York, NY, USA, 2005.
47. Struik, P.C.; Kuyper, T.W.; Brussaard, L.; Leeuwis, C. Deconstructing and unpacking scientific controversies in intensification and sustainability: Why the tensions in concepts and values? *Curr. Opin. Environ. Sustain.* **2014**, *8*, 80–88. [[CrossRef](#)]
48. UN. *Report of the United Nations Conference on the Human Environment*; United Nations: Stockholm, Sweden, 1972.
49. FAO. *Summary Report of the FAO International Symposium on the Role of Agricultural Biotechnologies in Sustainable Food Systems and Nutrition*; Food and Agriculture Organization of the United Nations: Rome, Italy, 2016.
50. Food and Agriculture Organization of the United Nations (FAO). Available online: <http://www.fao.org/> (accessed on 15 November 2018).
51. International Fund for Agricultural Development (IFAD). Available online: <https://www.ifad.org/> (accessed on 15 November 2018).
52. World Food Programme (WFP). Available online: <http://www1.wfp.org/> (accessed on 15 November 2018).
53. IFAD. *IFAD Strategic Framework 2016–2025. Enabling Inclusive and Sustainable Rural Transformation*; International Fund for Agricultural Development: Rome, Italy, 2016.
54. WFP. *WFP Strategic Plan (2017–2021)*; World Food Programme: Rome, Italy, 2017.
55. FAO. *Building a Common Vision for Sustainable Food and Agriculture: Principles and Approaches*; Food and Agriculture Organization of the United Nations: Rome, Italy, 2014.
56. UN. *Metadata Repository. Goal 2: End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture*; United Nations: New York, NY, USA, 2016.
57. Welch, R.M.; Graham, R.D. A new paradigm for world agriculture: Meeting human needs. Productive, sustainable, nutritious. *Field Crops Res.* **1999**, *60*, 1–10. [[CrossRef](#)]
58. Netting, R.M. *Smallholders, Householders: Farm Families and the Ecology of Intensive, Sustainable Agriculture*; Stanford University Press: Stanford, USA, 1993.
59. Brown, B.J.; Hanson, M.E.; Liverman, D.M.; Merideth, R.W. Global sustainability: Toward definition. *J. Environ. Manag.* **1987**, *11*, 713–719. [[CrossRef](#)]
60. Sing, A. Soil salinization and waterlogging: A threat to environment and agricultural sustainability. *Ecol. Indic.* **2015**, *57*, 128–130. [[CrossRef](#)]
61. Magdoff, F.; Weil, R.R. *Soil organic Matter in Sustainable Agriculture*; CRC Press: Boca Raton, FL, USA; London, UK; New York, NY, USA; Washington, DC, USA, 2004.

62. Khan, M.S.; Zaidi, A.; Wani, P.A. Role of phosphate-solubilizing microorganisms in sustainable agriculture—A review. *Agron. Sustain. Dev.* **2007**, *27*, 29–43. [[CrossRef](#)]
63. Johansson, J.F.; Paul, L.R.; Finlay, R.D. Microbial interactions in the mycorrhizosphere and their significance for sustainable agriculture. *FEMS Microbiol. Ecol.* **2004**, *48*, 1–13. [[CrossRef](#)] [[PubMed](#)]
64. Hobbs, P.R.; Sayre, K.; Gupta, R. The role of conservation agriculture in sustainable agriculture. *Philos. Trans. R. Soc. B* **2008**, *363*, 543–555. [[CrossRef](#)] [[PubMed](#)]
65. Lal, R. Conservation tillage for sustainable agriculture: Tropics versus temperate environments. *Adv. Agron.* **1989**, *42*, 85–197. [[CrossRef](#)]
66. Altieri, M.A. *Agroecology: The Science of Sustainable Agriculture*, 2nd ed.; CRC Press: Boca Raton, FL, USA, 2018.
67. Moore, H.L. Global prosperity and sustainable development goals. *J. Int. Dev.* **2015**, *27*, 801–815. [[CrossRef](#)]
68. Goodman, D. Organic and conventional agriculture: Materializing discourse and agro-ecological managerialism. *Agric. Hum. Values* **2000**, *17*, 215–219. [[CrossRef](#)]
69. Barberi, P. Functional agrobiodiversity: The key to sustainability? In *Agricultural Sustainability: Progress and Prospects in Crop Research*; Bhullar, G.S., Bhullar, N.K., Eds.; Elsevier: London, UK; Waltham, MA, USA; San Diego, CA, USA, 2013; pp. 3–20.
70. Brussaard, L.; De Ruiter, P.C.; Brown, G.G. Soil biodiversity for agricultural sustainability. *Agric. Ecosyst. Environ.* **2007**, *121*, 233–244. [[CrossRef](#)]
71. Reijntjes, C.; Haverkort, B.; Waters Bayer, A. *Farming for the Future: An introduction to Low-External-Input and Sustainable Agriculture*; MacMillan: London, UK, 1992.
72. Burton, C.H.; Turner, C. *Manure Management: Treatment Strategies for Sustainable Agriculture*, 2nd ed.; Silsoe Research Institute: Silsoe, UK, 2003.
73. Paoletti, M.G. *Invertebrate Biodiversity as Bioindicators of Sustainable Landscapes: Practical Use of Invertebrates to Assess Sustainable Land Use*; Elsevier: Amsterdam, The Netherlands, 1999.
74. Pant, L.P. Critical systems of learning and innovation competence for addressing complexity in transformations to agricultural sustainability. *Agroecol. Sustain. Food.* **2014**, *38*, 336–365. [[CrossRef](#)]
75. Lee, D.R. Agricultural sustainability and technology adoption: Issues and policies for developing countries. *Am. J. Agric. Econ.* **2005**, *87*, 1325–1334. [[CrossRef](#)]
76. Röling, N.; Wagemakers, M.A. *Facilitating Sustainable Agriculture: Participatory Learning and Adaptive Management in Times of Environmental Uncertainty*; Cambridge University Press: Cambridge, UK, 1998.
77. Conway, G.R.; Barbier, E.B. *After the Green Revolution: Sustainable Agriculture for Development*, 2nd ed.; Earthscan: London, UK; Sterling, VA, USA, 2009.
78. Dogliotti, S.; García, M.C.; Peluffo, S.; Dieste, J.P.; Pedemonte, A.J.; Bacigalupe, G.F.; Scarlato, M.; Alliaume, F.; Alvarez, J.; Chiappe, M.; et al. Co-innovation of family farm systems: A systems approach to sustainable agriculture. *Agric. Syst.* **2014**, *126*, 76–86. [[CrossRef](#)]
79. Tilman, D.; Balzer, C.; Hill, J.; Befort, B.L. Global food demand and the sustainable intensification of agriculture. *Proc. Natl. Acad. Sci. USA* **2011**, *108*, 20260–20264. [[CrossRef](#)] [[PubMed](#)]
80. Fleming, A.; Vanclay, F. Farmer responses to climate change and sustainable agriculture. In *Sustainable Agriculture*; Lichtfouse, E., Hamelin, M., Navarrete, M., Debaeke, P., Eds.; Springer: Dordrecht, The Netherlands, 2011; Volume 2, pp. 283–293.
81. Azadi, A.; Ghanian, M.; Ghoochani, O.M.; Rafiaani, P.; Taning, C.N.T.; Hajivand, R.Y.; Dogot, T. Genetically modified crops: Towards agricultural growth, agricultural development, or agricultural sustainability? *Food Rev. Int.* **2015**, *31*, 195–221. [[CrossRef](#)]
82. Prasad, R.; Kumar, V.; Prasad, K.S. Nanotechnology in sustainable agriculture: Present concerns and future aspects. *Afr. J. Biotechnol.* **2014**, *13*, 705–713. [[CrossRef](#)]
83. Garnett, T.; Godfray, C. *Sustainable Intensification in Agriculture: Navigating a Course through Competing Food System Priorities*; Food Climate Research Network, Oxford Martin Programme on the Future of Food: Oxford, UK, 2012.
84. Dorward, A. Agricultural labour productivity, food prices and sustainable development impacts and indicators. *Food Pol.* **2013**, *39*, 40–50. [[CrossRef](#)]
85. Reganold, J.P.; Jackson-Smith, D.; Batie, S.S.; Harwood, R.R.; Kornegay, J.L.; Bucks, D.; Flora, C.B.; Hanson, J.C.; Jury, W.A.; Meyer, D.; et al. Transforming US agriculture. *Science* **2011**, *332*, 670–671. [[CrossRef](#)] [[PubMed](#)]
86. Pretty, J.N. Participatory learning for sustainable agriculture. *World Dev.* **1995**, *23*, 1247–1263. [[CrossRef](#)]

87. Luna, G.T. The dominion of agricultural sustainability: Invisible farm laborers. *Wis. Law Rev.* **2014**, *265*, 265–288.
88. Meares, A.C. Making the transition from conventional to sustainable agriculture: Gender, social movement participation, and quality of life on the family farm. *Rural Sociol.* **1997**, *62*, 21–47. [CrossRef]
89. Holt-Giménez, E. *Campesino a Campesino: Voices from Latin America's Farmer to Farmer Movement for Sustainable Agriculture*; Food First Books: Oakland, CA, USA, 2006.
90. Thrupp, L. *New Partnerships for Sustainable Agriculture*; World Resources Institute: Washington, DC, USA, 1996.
91. Glaser, B. Prehistorically modified soils of central Amazonia: A model for sustainable agriculture in the twenty-first century. *Philos. Trans. R. Soc. B* **2007**, *362*, 187–196. [CrossRef] [PubMed]
92. Altieri, M.A. Linking ecologists and traditional farmers in the search for sustainable agriculture. *Front. Ecol. Environ.* **2004**, *2*, 35–42. [CrossRef]
93. Sajjad, H.; Nasreen, I.; Ansar, S.A. Assessing spatiotemporal variation in agricultural sustainability using Sustainable Livelihood Security Index: Empirical illustration from Vaishali district of Bihar, India. *Agroecol. Sustain. Food* **2014**, *38*, 46–68. [CrossRef]
94. Thompson, P.B. *From Field to Fork. Food Ethics for Everyone*; Oxford University Press: New York, NY, USA, 2015.
95. UN. *Universal Declaration of Human Rights*; United Nations: Paris, France, 1948.
96. Mechlem, K. Food security and the right to food in the discourse of the United Nations. *Eur. Law J.* **2004**, *10*, 631–648. [CrossRef]
97. Lowder, S.K.; Scoet, J.; Raney, T. The Number, Size, and Distribution of Farms, Smallholder Farms, and Family Farms Worldwide. *World Dev.* **2016**, *87*, 16–29. [CrossRef]
98. Pisante, M.; Corsi, S.; Kassam, A.; Friedrich, T. The Challenge of Agricultural Sustainability for Asia and Europe. *Transit. Stud. Rev.* **2010**, *17*, 662–667. [CrossRef]
99. Lithourgidis, A.S.; Dordas, C.A.; Damalas, C.A.; Vlachostergios, D. Annual Intercrops: An Alternative Pathway for Sustainable Agriculture. *Aust. J. Crop Sci.* **2011**, *5*, 396–410.
100. Scherr, S.J.; McNeely, J.A. Biodiversity conservation and agricultural sustainability: Towards a new paradigm of 'ecoagriculture' landscapes. *Philos. Trans. R. Soc. B* **2008**, *363*, 477–494. [CrossRef] [PubMed]
101. Global Policy Engagement. Website of the IFAD. Available online: <https://www.ifad.org/web/guest/global-policy-engagement> (accessed on 30 May 2018).
102. Tiftonell, P. Ecological intensification of agriculture—Sustainable by nature. *Curr. Opin. Environ. Sustain.* **2014**, *8*, 53–61. [CrossRef]
103. Redclift, M. Sustainable development (1987–2005): An oxymoron comes of age. *J. Sustain. Dev.* **2005**, *13*, 212–227. [CrossRef]
104. Eizenberg, E.; Jabareen, Y. Social sustainability: A new conceptual framework. *Sustainability* **2017**, *9*, 68. [CrossRef]
105. Missimer, M.; Robèrt, K.-H.; Bromann, G. A strategic approach to social sustainability—Part 1: Exploring the social system. *J. Clean. Prod.* **2017**, *140*, 32–41. [CrossRef]
106. Frantzeskaki, N.; Loorbach, D.; Meadowcroft, J. Governing societal transitions to sustainability. *Int. J. Sustain. Dev.* **2012**, *15*, 19–36. [CrossRef]
107. Cheney, H.; Nheu, N.; Vecellio, L. Sustainability as social change: Values and power in sustainability discourse. In *Sustainability and Social Science: Roundtable Proceedings*; Cheney, H., Katz, E., Solomon, F., Eds.; Institute for Sustainable Futures and CSIRO Minerals: Melbourne, Australia, 2004; pp. 225–246.
108. Kajikawa, Y.; Tanco, F.; Yamaguchi, K. Sustainability science: The changing landscape of sustainability research. *Sustain. Sci.* **2014**, *9*, 431–438. [CrossRef]
109. Janker, J.; Mann, S. Understanding the social dimension of sustainability in agriculture: A critical review of sustainability assessment tools. *Environ. Dev. Sustain.* **2018**, 1–21. [CrossRef]

