

Article

Circular Business Models and Circular Agriculture: Perceptions and Practices of Dutch Farmers

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Abstract: Although it is not clear yet what a full-grown circular economy (CE) is going to look like, it is clear that the challenges of transitioning to a CE are both impressive and urgent. The Dutch government has expressed the ambition to establish a CE in the Netherlands in 2050. In the wake of this, the Dutch Ministry of Agriculture, Nature and Food Quality laid down a vision on circular agriculture (CA). A key question with respect to both CE and CA is if and to what extent this means business as unusual: How distinct is circular business from normal business operations? The ways in which the notions of CE and circular business models (CBMs) are often introduced suggest a big difference. However, closer scrutiny also reveals that in practice the impact of circularity is less obvious. Against the backdrop of such opposite observations, this paper examines how Dutch farmers perceive circularity and what implications this has for their production practices. Interviews (n = 13) with Dutch farmers show that circular business is adapted in normal business management by some and regarded as a genuine alternative to the conventional food system by others. By taking Dutch farmers as an example, this paper aims to contribute to our understanding of how CE is interpreted in small and medium enterprises (SMEs).

Keywords: circular business models; circular economy; circular agriculture; incremental change; radical change; transition; SMEs



Citation: Dagevos, H.; Lauwere, C.d. Circular Business Models and Circular Agriculture: Perceptions and Practices of Dutch Farmers. *Sustainability* **2021**, *13*, 1282. <https://doi.org/10.3390/su13031282>

Academic Editor: Carmen Jaca
Received: 7 December 2020
Accepted: 22 January 2021
Published: 26 January 2021

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1. Introduction

Established practices of producing and consuming are coming under pressure as climate change, biodiversity loss, resource scarcity and greenhouse gas (GHG)-emission problems become more manifest and pressing. While we have known for long that natural resources are limited and realise that living a life of luxury has limits, it is only recently that more sustainable ways of production and consumption are surrounded by an increasing sense of urgency and are becoming indispensable subjects of discussion and research. Setting “responsible production and consumption” in 2015 as one of its Sustainable Development Goals (SDGs 12), the United Nations testifies to this. The same holds for the fact that the notions of circularity and circular economy (CE) have not only attracted the attention of scientists and journalists lately but also have gained significant momentum among policymakers and politicians [1].

The latter is illustrated by the interest of the Dutch government since a few years to facilitate and stimulate a transition towards a full-grown CE by the mid-twenty-first century [2]. In line with this ambition, the Ministry of Agriculture, Nature and Food Quality (LNV) of the Netherlands developed a vision on circular agriculture (CA) with the telling subtitle “The Netherlands as a leader in circular agriculture” [3]. Central to this vision is that “the current supply chain—with a beginning, an end and leaks within the chain—needs to be transformed into a system with minimal unnecessary losses” [3] (p. 20). In other words, the linear take-make-waste-economy, that also has developed itself to perfection in Dutch agriculture since the Second World War, should transform into food production practices which have regeneration (of topsoils’ health and vitality), recycling

(of residual streams) and minimisation (of nonessential inputs and non-renewable energy sources) as their guiding principles.

The way in which CA is presented in the vision of the Dutch Ministry of Agriculture is unmistakably a counterpart of conventional agriculture that is undoubtedly highly successful in producing food efficiently, albeit at the cost of sustainability. Remarkably, this shows clear resemblance with the way in which circular business models (CBMs) are presented in current literature. Likewise, CBMs are introduced as different (see also Section 2.1); positioned as beyond the take-make-dispose economic model [4–6]. CBMs stand for structural change in current production processes; for business as unusual, and are considered important driving forces of the CE at large:

“The transition to a CE requires fundamental changes in current business models in order to exploit the full environmental and economic potential of the CE approach.” [4] (p. 343)

“The circular economy (CE) requires companies to rethink their supply chains and business models.” [7] (p. 36)

“A circular economy describes an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes” [8] (p. 224)

The question; however, is to what extent this “new” character of CA and CBMs respectively differs from “normal” agriculture and “old” economy, both in theory and, above all, in practice. To explore this question, we distinguish an “alternative” from an “adaptive” approach.

Section 2 is devoted to the introduction of both approaches within the context of recent studies on circularity. It is briefly discussed what characterises an adaptive or an alternative perspective on CE and CBMs. Key to the difference between the two approaches is that the latter deviates more substantially—radically and holistically—from the economy and business models as we know them.

In Section 3, attention shifts from theory to practice. More specifically, to the perceptions and production practices of Dutch farmers within the context of CA. What do they think of CA? How much is CA changing their business management? Do their opinions and entrepreneurial behaviour express an adaptive or an alternative approach towards CA? Questions such as these are qualitatively explored.

In the concluding section, Section 4, we discuss the variety of practical outcomes that resulted from taking a different point of view for or against one of the two approaches distinguished. Next to clear differences in farmers’ interpretation (perceptions) and implementation (practices) of CA, emphasis is also placed on the interrelationship between the two approaches. The adaptive and alternative approaches are both contrasting and complementary ones. However, the latter does not imply equality. On the contrary: a company culture in which an ‘alternative’ mentality prevails will generate more ambitious views on the role and responsibility of SMEs as change agents in the transition to a CE.

2. An Adaptive and Alternative Approach to CE and CBMs

It has often been shown that new concepts are quickly encapsulated by established ways of thinking. This can be done by giving innovative ideas a different interpretation or by changing their focus. Anyone familiar with the philosophical work of Thomas Kuhn [9] knows that it is a strategy of the normal science to try to defuse alternative theories that are (possibly) threatening the prevailing paradigm by assimilating them. Modern examples of this phenomenon are the way in which the interpretation of social innovation has been reshaped in Brussels’ policy circles [10], how sustainability has been transformed into green growth [11], or how SDG 12 is framed in terms of efficiency [12]. The common denominator in such examples is that the alternative is made adaptable to the traditional frameworks in such ways that it no longer jeopardises the status quo but rather reinforces it. Thus, this is

not so much about old wine in new bottles, but rather the opposite: new wine is packed in old bottles.

2.1. Incremental Improvements vs. Addressing the Roots of Problems

Making the alternative concept of CE adaptable to the economy as we know it is also relevant to the way in which CE is currently often treated and framed. CE is first and foremost approached from a framework in which resource efficiency (“more with less”), profits, competitiveness, employment, income, economic growth and prosperity are keywords. Looking at the CE through this lens, it becomes fully compatible with the standard neoclassical economy and serves its traditional objectives. This adaptive approach of CE—and simultaneously CBMs—comes down largely to an interpretation of keep on doing the same thing in a different way. Nevertheless, another characteristic of an adaptive approach of CBMs is to introduce CBMs as a fundamentally different way of producing goods and services—while little of this remains in the practical implementation (e.g., [2,13]). Another salient feature of an adaptive approach is that it relies heavily on technological innovation as a solution to sustainability problems and driver of transitioning towards a CE. The fact that it is customary to concentrate on technological improvements, efficiency-driven strategies, material flows, resource longevity or economic growth when CE is conceptualised (on paper) or operationalised (in practice) is often recognised in scholarly work [11,14–17]. After a systematic analysis of 114 conceptualisations of CE, also Kirchherr and colleagues [8] concluded that definitions of the concept mostly stopped at reuse and recycling without considering CE as a systematic shift in the sustainable development of the economy and society. Because of the observed dominance of an adaptive approach in contemporary literature, Kirchherr et al. [8] (p. 229) are afraid that “CE implementation will only result in incremental improvements at best, with the CE concept then not delivering on its promise of fundamental change”.

Hofmann [5] has similar misgivings. He wonders how radical and holistic—in our terms: how alternative—CBMs are perceived in current literature as a catalyst for a profound economic transition towards sustainability. In his review of the relevant literature Hofmann highlighted that CBMs are heavily influenced by technological optimism and economic principles of growth and efficiency. Neither the attention paid to changed relationships between providers and users (e.g., sharing, leasing) nor the possibilities offered by modern technology to reorganise such relationships into so-called product-service systems (PSS), give reason to believe that this is going to lead to a sustainable transition of the economic system and a far-reaching change in economic logic. Unanimous with Kirchherr et al., Hofmann points out that much of modern CBM thinking is basically incremental, reinforcing neoliberal ideology rather than questioning it or breaking with it decisively. Hofmann’s [5] (pp. 371, 372) final assessment reads:

“We can describe the contemporary overall theoretical framing of CBMs as ambivalent and divergent when we ask whether CBMs function as catalysts for an economic transition toward sustainability. CBM conceptions are mostly far from holistic and radical, as they fail to address the roots of the persistent problems it aims to solve. Researchers primarily pursue an ecological modernist position that technical solutions can create a new efficiency revolution to decouple economic expansion from ecological burdens (...) The academic literature is still only beginning the discovery process, but it would benefit from a greater engagement with more ‘radical’ sustainable BM innovation approaches than those that underpin the current understanding and visions of CBMs.”

Interesting enough, Hofmann emphasises that as long as an adaptive approach dominates, the reference frame of CE remains one of resource efficiency. Corresponding CBM conceptions concentrate on economically viable business strategies in which natural resources are kept longer circulating in production processes by closing resource cycles in more smart and efficient ways, and/or in which more renewable resources are used. However, critical reflections by Hofmann and other researchers rightly claim that such

strategies could also fit nicely into the linear economy. Hence, in search for more distinction it is suggested that the CE is more aptly typified by more disruptive changes into the direction of slow-down resource flows as well as substantial reduction in both production and consumption. An alternative approach of CE, thus, is about sufficiency—less production and less consumption—rather than efficiency. An alternative interpretation of CE does not concentrate merely on production processes and their accompanying economic principles fuelling business management logic and views on corporate responsibility, but also includes patterns of over-consumption and their underlying norms and values on worthy lifestyles and “the good life”.

In line with this is a growing recognition to incorporate consumption better into CE thinking [4,18–24] as well as to improve our insights into CBM and (lower levels of) consumption [15,17,25–28]. The fact that consumption has been fairly under-researched to date is hardly surprising when it is considered that influential definitions of the CE, e.g., by the Ellen MacArthur Foundation [29], focus on material and energy flows and not on consumption processes. The example of Kirchherr and colleagues [8] to include consumption in their above-cited CE definition is therefore notable.

2.2. Other Binary Pairs Close to Adaptive and Alternative

Putting emphasis on sufficiency and consumption generates a more radical and holistic interpretation of CE, to use Hofmann’s qualifications. Such keywords of an alternative approach of CE bring another distinction to mind that bears striking resemblance to the distinction between an adaptive and an alternative approach: the binary pair of weak and strong sustainability [12,16,30–32]. The weak sustainability approach fits in the adaptive approach because in both cases solutions are sought in smarter technological innovations, in using more renewable resources, in selling more “green” products. In contrast, a strong sustainability approach coincides with the alternative approach because both approaches are about slowing down, reducing and rethinking production processes and consumption cycles. While simplicity and sufficiency, qualitative (post-)growth and degrowth are taboo words in the weak sustainability approach, these are keywords in the strong sustainability approach. While the adaptive and weak sustainability approaches anxiously hold on to “normal” economics and the dominant social paradigm of consumerism, the alternative approach goes beyond their logic and boundaries. By exploring uncharted territory to find new transition paths in production and consumption, as well as to delve deeper to find new founding principles for economics and consumer society, an alternative approach may be typified as being more radical and holistic than the adaptive approach [11,17,33–36].

In terms of Raworth [37] (p. 256ff), the alternative approach belongs to the camp of the “prepare-for-landing” advocates on the metaphorical economic plane flight. To them it is important to switch off the cruise control of economic growth and consumerism advocated by the “keep-on-flying” passengers on board, and instead start realising that the plane is running out of fuel, start admitting that we should prepare for touchdown and start learning how to land as softly and safely as possible. The prepare-for-landing passengers know for sure that it is not future proof to proceed as usual. In other words, approaching the CE as if it is normal economics with other means—like the keep-on-flying passengers by and large suppose—is antithesis to the prepare-for-landing adherents. Simultaneously, the prepare-for-landing passengers are fully aware that the descent is surrounded by much uncertainty. It appears to be hard to imagine how an economy thrives when it is not fuelled by GDP growth. This is unsurprising given that it belongs to the essence of a transition that we do not know how the system will evolve and what the associated business models will look like. Obviously, gauging a CE before having experienced its conditions and dynamics, is difficult. An illustrative example of this is provided by an interview-based study by Tunn et al. [17] (p. 332), showing that even experts in the field of CE have serious difficulties in imagining business models which contradict business as usual.

2.3. Interpretations of CE and CA in the Netherlands

As indicated above, the Dutch government has formulated a serious ambition regarding the transformation of the current linear and fossil-dependent economy to a full-fledged circular economy in three decades from now. A serious ambition indeed, considering that a recent exploratory study of the circular economy in the Netherlands by PBL Netherlands Environmental Assessment Agency found that the development of the CE so far revolved primarily around the lowest R-strategy of recycling and remained far from higher R-strategies, such as refuse, reduce or reuse [38]; see [6,39] for similar observations. In short, the CE transition appears to be in a stage of cautious change rather than disruptive change.

A similar line of argumentation could be drawn with respect to the ambition of the Dutch Ministry of Agriculture, Nature and Food Quality (LNV). Its vision on CA [3] is also ambitious. In addition, in another recent study of the same PBL Netherlands Environmental Assessment Agency [40] (pp. 11, 38, 50) it is asserted that the ambition for a structural change in agriculture, as envisaged by the Dutch government, has hardly been translated into concrete policy measures hitherto, and, as a result, hardly contributed to the intended transition to circular agriculture. Besides, PBL observed that the policy for circular agriculture is mainly aimed at adaptability to normal business operations and primarily focused on technical solutions. This suggests that an adaptive approach prevails. An assumption that seems to be confirmed by the finding that a large majority of farmers believe that CA does not imply that there is much need to change their business management thoroughly [40] (p. 46). In fact, PBL's assessment of the current state of affairs is also in accordance with the adaptive approach that is pivotal in the vision of LNV. That is, despite the firm introduction of CA as a new way to go because "things need to change" [3] (p. 19), in its elaboration CA is first and foremost interpreted in adaptive terms. CA is primarily regarded as a technological challenge requiring smart innovations that improve the efficiency of production processes. The objective of the LNV vision is rather to safeguard the socio-economic position of farmers in the near future than to call for broad institutional change in the food system—including consumption practices. Consumers are almost completely out of the picture in the LNV vision and also in this respect its perspective on CA remains far off from a more alternative approach.

It is, however, possible to look through a more alternative lens at CA, as De Boer and Van Ittersum [41] have shown, or the group of so-called Caring Farmers (see also Section 4.1) has demonstrated in the ideas it cherishes. Such perspectives on CA certainly pay attention to increasing efficiency (fewer emissions, better feed and soil management, processing residual flows, precision agriculture, etc.), but additionally also other controversial topics are highlighted such as excluding suitable land for growing animal feed, reducing livestock numbers, lowering animal-based consumption levels or reconsidering our focus on economic growth [41] (p. 45).

Currently, reflecting on interpretations, implications and implementations of CE from the perspective of the agricultural domain, as done by De Boer and Van Ittersum, is still in its infancy. A recent study by Esposito and colleagues [42] is, to the best of our knowledge, a first attempt to explore this field of research on the CE applied to the context of agriculture and food supply chains. From the perspective of CE and CBM studies on the other hand, the agri-food sector is usually conspicuous in its absence. In the above-mentioned CBM literature, for example, one looks in vain for specific elaborations on the agricultural domain, let alone reflections on CA beyond an adaptive approach. In a rare study devoted to CBM and agriculture, the main focus is on the potential of converting agro-waste into valuable products [43]. Interpreting CA in terms of valorisation, logistics, closing-loop business strategies and waste management refers primarily to an adaptive perspective. For being a pioneering study this research by Donner and colleagues [43] confirms, rather than undoes, that the topic of CA in practice is under-studied to date. An explorative analysis suits this state of affairs. Hence, interviews have been carried out to get more insight into what (visionary) business models are described by practice experts (i.e., Dutch farmers)

when they are being asked what they believe CA stands for and what kind of business management belongs to it. The following section examines these issues.

3. Farmers on Their Way to Circularity: A Qualitative Exploration

3.1. Farmers Interviewed and Types of Farms Involved in the Present Study

To explore how Dutch farmers perceive circularity and what kind of implications CA has for their production practices, we included a broad group of farmers with distinct types of farms covering various ways in which contributions to CA are currently made by Dutch farmers as representatives of SMEs. The selection of respondents was inspired by a 2020 Dutch research report by Hoes and colleagues [44] that distinguished different ways in which various types of farms could contribute to CA (from high-tech systems to multifunctional agriculture and from producing more sustainable proteins to reducing external inputs). Both based on the study by Hoes and additional desk research on the internet, thirteen types of farms were selected. The types of farms included vary from a conventional pig farmer with a small plus for animal welfare and production of sustainable energy to biodynamic (BD) multifunctional farms with livestock, crops, nature conservation, a farm shop and/or webshop and care. In between we found a conventional pig farmer who made use of residuals flows of the food industry, a conventional broiler farm with high-tech solutions to reduce ammonia emissions, a smart cooperation between livestock and conventional arable farmers, a BD dairy farm and an organic mixed farm with dairy cattle and arable crops, a farm with special livestock, an outdoor pig farm and a BD pig farm and a nature-inclusive mixed farm with dairy cattle and arable crops, and a community farm. In addition, three of the farmers who were not certified organic or BD (the outdoor pig farm, the farm with special livestock and the community farm) claim to go beyond the organic standard but did not want to certify to avoid administrative burden and additional costs.

Twelve of the interviews with Dutch farmers were carried out by telephone due to Covid-19 restrictions, and one interview was done in person. The interviews were semi-structured, covering questions about the origins of the farm, motivations about willingness to contribute to CA, about how farmers perceive CA, and about the implications of CA for their production practices. All interviews lasted 1.5 to 2 h and were recorded and elaborated by the researchers. Eleven of the interviews were literally transcribed and interview reports were sent back to the interviewees for feedback and approval.

3.2. Taking an Adaptive or Alternative Stance?

After having interpreted farmers' reactions to the questions raised in terms of an adaptive or alternative approach to CA, it was striking to notice that at least seven of them took a rather alternative stance to CA. Particularly farmers who recently made a shift from conventional to BD or organic farming as well as farmers with a conventional farm within a cooperation, appear to be sympathetic to CA and take business measures to implement it (e.g., exchanging crops and manure in smart ways contribute to the closing of nutrient cycles). Farmers adopting (more or less) alternative approaches were critical about the current agricultural practices of increasing production and efficiency and lowering the cost price. For them, this did not seem to be the right direction anymore. Farmers, in turn, who were more supportive to an adaptive approach, searched primarily for technological solutions to contribute to CA. To provide a more vivid impression of farmers' responses to questions concerning their motivations for contributing to CA, a few quotes are presented about different motives of farmers to choose for a particular (transition) path. Please note that the excerpts from the interviews are not verbatim but paraphrased to increase readability.

To give an impression of farmers' reactions in favour of transitioning away from prevailing agricultural practices:

Because of a car accident and problems with my immune system and all kinds of allergies, I started to gain more in-depth knowledge about food. As a result I lost trust in food from retailers and decided to start producing my own food and

keeping my own animals. My father owned some parcels of forest and there I could start. (BD outdoor pig farmer)

My farmer's heart was violated very much... As an agricultural contractor I once worked on the tractor for 48 h. Nobody had their own labour anymore and because of the use of pesticides and artificial fertiliser, the farms became larger and larger. I realised that these developments are not future proof, and that I did not want to be part of it as a farmer if it has to be like this. (BD multifunctional farmer 1)

I wondered whether they needed a producing farmer here who produces as efficiently as possible for the world market, or a farmer aligned to the society who also asks society 'What do you want from me?' And I decided to turn to the side of society. (BD multifunctional farmer 2)

I am a dedicated newcomer in agriculture. If you do not want to become the largest food producer, you should become the most sympathetic one. Expansion in livestock farming will go on, but if you do not want to join that tendency, you have to invent something special. (Farmer with special livestock)

I have always liked short food supply chains because in that way there will be some money left for the farmer. The ignorance of the consumer struck me. I wanted to do something about that. My wish is that finally 100% of the consumers become more aware of how their food is produced. (Community farmer)

I am a bit of a developer. Someone who thinks about new systems. How can we better use the land and protect nature? I just like to think about these things. And how it can be put into a business model. But some things cannot be expressed in money. It is also about the fun of being a farmer. (Cooperating farmer)

Although many farmers interviewed expressed sympathy for change as such, others were more reluctant and prefer to rely on technological solutions:

We have 500 sows at the new location and we have a permit to build a new stable for meat pigs. But we do not want to build a conventional stable because we need to install an air washer then and we do not want that. Therefore, we talked about joining a project about separating manure into a thick and a fluid fraction, which aims to reduce ammonia emission, and making manure more suitable for fermentation and production of gas. (Conventional pig farmer 1)

I noticed little understanding for food producers. I wanted to show the role of pigs in the food system. In that way, I hoped to receive more societal approval. I started feeding the pigs with residual flows from the food industry within a 100 km radius, instead of feeding them soy from abroad. (Conventional pig farmer 2)

We opted for writing a business plan that aimed at "and-and" solutions directed towards cost price, environment, animals and people. We also looked specifically for a solution for the vans that drive back and forth between our farms. (Conventional broiler farmer)

3.3. How Circular Are Farms in Practice?

On the basis of the interviews with and the websites of the farmers interviewed, we tried to get an impression of how circular their farms really were. It appeared that all the farmers with a (more or less) alternative approach took multiple measures with the purpose to contribute to CA. However, some of the farmers express their inadequacy to realise production processes and a business model which were fully circular. Some of the farmers regretted this and are willing to take more steps towards circularity in the future, while others were content with the current situation. The three farmers with an adaptive approach seem to be more convinced that they already contribute substantially to CA.

Although none of the farmers interviewed believed that it was possible to become 100% circular, intentions and opinions regarding the objective to become as circular as possible clearly differed. Various quotes could be presented to illustrate the different opinions of the interviewees. The following excerpts from the interviews start with awareness of one's inadequacy of contributing to CA to the full:

The farm is not completely circular yet, and I hardly know how to make further improvements. The inputs come from the region, that is, from the Netherlands and Germany. The farm is neither climate neutral nor energy neutral, and I do not know how to change that either. I use "blue diesel" for my tractor that is made out of food waste and labelled CO₂ neutral. I do realise though that using this type of diesel is possible because not many farmers use it. When more farmers would use blue diesel, there would not be enough of it. (BD dairy farmer)

The farm is not completely circular: Feed is imported and, by selling meat, nutrients are taken away from the farm which do not come back. I am idealist but it is good as it is. (BD outdoor pig farmer)

Our credo is to decrease the cycle as much as possible, preferably at the own farm. We try to be as local as possible, both with respect to external inputs and our supply of meat. How circular can you be? Although we realise that an electric van needs batteries, we like to buy an electric van, but at this moment we are still using diesel. (Outdoor pig farmer)

The farm has more outputs than inputs, much more, and that does not bother me. Concentrate (grain and maize flour) is bought for the dairy cattle, because it is not possible to grow grain and maize on peaty soil and recreants do not like grain and maize because you cannot walk through it and you cannot look across the maize, and the recreants are my clients. (BD multifunctional farmer 2)

More reserved reactions were also recorded:

Sustainability and circularity do not bother me much in daily practice. I try to be as sustainable as possible, but I realise and accept that not everything I do is "green". (Farm with special livestock)

It also is possible to produce milk without concentrate but then the cows will produce about 5000 L of milk per year. That does not fit in our business model yet. However, farms which do not use concentrate inspire me. Maybe we will stop using it one day. To me, sustainable farming is a process, a way of life. (Organic mixed farmer)

Well, every pig farmer will say that they contribute to CA because residual flows from the food industry are used already as pig feed, for example, citrus and soy pulp. Because of that, the cycle is already closed for quite a big part. In addition, we buy straw from an arable farmer and the manure goes back to the land. (Conventional pig farmer 1)

An air washer is expensive and it does not produce anything but clean air, and you cannot sell clean air. So we asked ourselves: Is it possible to regain heat with the air washer? Now we not only regain heat but minerals as well. So now we have developed a system in which heat is available unrestrictedly, without using fossil fuels. (Conventional broiler farmer)

We never use antibiotics, the broilers are never sick, there is enough heat, also during the winter and the farming system is better for animal welfare than at the most other farms with slower growing broilers. Slower growing broilers cost 40% more raw materials and the need for energy is much bigger (in that case gas is still needed). The consequences of that choice are; thus, far-reaching. (Conventional broiler farmer)

3.4. Farmers' Opinions about the Dutch CA Ambitions

After asking farmers about their personal opinions and business considerations regarding CA, we leave the barnyard now, so to speak, and turn our attention in this section to what farmers think of the CA ambitions of the Dutch Ministry of Agriculture. Most interviewees appeared rather critical about these ambitions. On the one hand, criticism stems from the idea that ambitions do not go far enough—according to farmers on the alternative end of the spectrum. On the other hand, criticism arises from farmers at the adaptive end of the spectrum: they indicate that the CA ambitions go too far because, in practice, such ambitions are qualified as inapplicable and unfeasible. Particularly the latter form of criticism is in accordance with two recent survey studies on Dutch farmers' opinions about CA topics: in comparison to a first 2019 study the successive 2020 study signalled more negative reactions of farmers to various CA-related issues [45]. Despite being critical, many of the interviewees in our study however appreciated the attention of the Dutch Ministry of Agriculture to develop a vision about CA as well as expressed understanding about the fact that such a vision must take many (vested) interests into account.

To give an impression of remarks made during the interviews in response to the request to give one's opinion about the Dutch CA ambitions, various quotes will be cited again in this section. The first six excerpts from the interviews below refer to critical reactions based on the opinion that CA ambitions are not going far enough. As many of our interviewees turned out to be more at the alternative end of the adaptive–alternative continuum, quotes of this tendency are in the majority. However, also the voices are heard of “adaptive” interviewees who are more critical of CA for going too far, in the sense that CA jeopardises prevailing agricultural practices. This section closes with four excerpts from the interviews that represent this point of view.

I was glad with the Dutch Ministry of Agriculture's ambition regarding circular agriculture, but if it does not lead to transition towards a resilient system it will be not of much use. If we go on keeping so many pigs and chickens, a circular agriculture is just not possible. The food system should be arranged at a local level and for our own food provisioning. On a world-wide scale we should arrange food production at local levels in order to close cycles. And we should be deeply ashamed of ourselves that the Netherlands are the second exporting country of agricultural products in the world. (BD multifunctional farmer 1)

Of course I subscribe to the vision that we have to move into the direction of circular agriculture, but there are still many open ends that need elaboration. We are talking about carbon, nitrate, biodiversity, soil fertility, for instance, but in the vision of the Ministry such words are mentioned but not elaborated in more detail. If the Ministry is really serious about circular agriculture, it is important to really go for it. This also holds for farmers who want to take steps into the direction of circular agriculture. You have to go to the left or to the right. You cannot keep on walking in the middle, a little bit of circular agriculture, a little bit of nature conservation, that is not possible. (BD multifunctional farmer 2)

The Dutch ambition with regard to circular agriculture is noble and beautiful, but the literal meaning of circular agriculture gradually disappears to the background. A genuine circular farmer should really close cycles, preferably at farm level, but if that is not possible, at local level. You cannot call it circular farming when the feed still comes from elsewhere in the world, can you? The Ministry should be stricter about that. In my opinion you cannot call it circular agriculture if you still use artificial fertiliser from whatever place in the world. You are not a circular farmer when you use concentrate from South America. Possibly you are not even trying to be one if you still need such fertilisers or concentrate. Circular agriculture is used as greenwashing, I am afraid, and runs the risk of being applied by taking very small steps at such a pace that hardly anything will be changed in 10 years' time. (Nature-inclusive mixed farmer)

I have a very positive attitude towards circular agriculture, provided that it is real circular agriculture. The concept of circular agriculture used by policymakers is a surrogate: As long as no less livestock is kept, it will not be possible to talk about real circular agriculture. At this moment one especially looks for technological solutions. In essence, the current, non-circular agricultural system is not really in transition. (BD dairy farmer)

The vision of the minister is nicely written, but it should have been more decisive and demanding. Now, the vision gives me a strange feeling. What does the vision want from the farmers? The vision seems to be written so carefully as to prevent farmers from rising up in arms against it. (BD outdoor pig farmer)

The vision does not go far enough. It has been written under the approval of organisations that represent vested farmers' interests. An ambition of closing nutrient cycles at the level of North Western Europe is not that difficult. You only have to stop using soy. This can be arranged within five years. In other words, the vision is rather cautious than ambitious. I can understand that, given the economic interests at stake and the dependency of so many companies and employees of the conventional ways of farming and trade. (Outdoor pig farmer)

Scepticism about CA ambitions is also vented in the interviews conducted:

I like the vision with regard to circular agriculture. But I have much doubts about the business model behind the vision. A lot of my friends are "green" political voters but they do not buy organic food. (Farmer with special livestock)

The vision needs implementation in practice. You can make calculations about everything in theory. But what about practical applicability? How can you change the feed composition for dairy cows producing 10,000 L per year? That is simply not possible. (Cooperating farmer)

The vision is nice, but to realise it... A big part of livestock farming already works with cycles, but these cycles should be closed further. It will be difficult to grow all feed in the Netherlands. There is simply not enough land available to realise this. It could be possible on a European scale though. (Conventional pig farmer 1)

In China only about 11% of the land is suitable for agriculture. If this land would apply for circular agriculture, hundreds of millions of Chinese would starve. This also holds for the Netherlands: We do not have enough fertile land for producing enough food via circular agriculture. There is a lobby against import and export and that is nonsense: 80% of the raw materials needed for farming come from the West-European region. (Conventional broiler farmer)

4. Discussion and Conclusions

4.1. Farmers as a Proxy of the Role of SMEs in CE

This paper explored the perceptions and motives of Dutch farmers to contribute to CA as a proxy to understand the role of small and medium entrepreneurs in the CE transition. It is shown that circularity is perceived in different ways as well as put into practice differently. By taking the binary adaptive and alternative approaches as a starting point, and by taking Dutch farmers as practice case, this study demonstrated that some entrepreneurs were counting first and foremost on technological solutions to meet circular challenges. Others took a broader perspective by asserting that it is no longer obvious that making profit whatever the costs is unconditionally valid or by hinting that axiomatic production growth whatever the inputs needed is no longer undisputed. Most farmers interviewed in the present study turned out to be more at the alternative end of the adaptive–alternative continuum. These farmers are convinced that incremental changes in current agricultural production processes and corresponding business management are not sufficient to realise a genuine CA. Sections 3.2 and 3.3 gave evidence of this position. The corresponding opinion about governmental CA ambitions is that it is not believed that this CA vision

is going to bring the required sustainable transition in agriculture. Section 3.4 revealed this finding.

Of course, our numbers were small ($n = 13$) and not representative of the Dutch farming community as a whole. Whereas the latter seems to be more at the adaptive end of the adaptive–alternative continuum (as [45] indicated), it has already mentioned in Section 3.2 that a relatively large number of the farmers included in the present study followed mainly an alternative approach ($n = 7$). Towards the adaptive end of the adaptive–alternative continuum, only three farmers could be situated, whereas three other farmers could best be positioned in-between. Table 1 provides an overview, and we add information to it by combining it with the ten critical performance indicators (CPIs) for CA as identified by Erisman and Verhoeven [46]. These CPIs are, respectively, (1) soil preservation; (2) closing nutrient cycles; (3) reduction of greenhouse gasses and ammonia; (4) sustainable energy; (5) maintenance of biodiversity; (6) nature conservation; (7) animal welfare; (8) animal health; (9) using residual flows from the food industry; and (10) contribution to regional economy and vitality of the rural area. Analysis of the interview data and of available farmers' websites with these CPIs in mind revealed that our thirteen farmers appeared to fulfil the following criteria: Biodynamic or organic farming (five farms); taking good care of the soil, preservation of organic matter (seven farms); closing nutrient cycles (seven farms); reducing emissions of greenhouse gasses (CO_2 , CH_4 , N_2O) and ammonia (six farms); sustainable energy (eight farms); maintenance of biodiversity (eight farms); nature conservation (five farms); improving animal welfare (varying from a small plus to keeping animals according to their natural needs) (12 farms); less use of antibiotics (10 farms); using residual flows from the food industry (four farms); and contributions to regional economy and vitality of the rural area by means of farm shop or web shop (nine farms). Table 1 also shows that farmers following an adaptive approach appear to address less CPIs than farmers adhering to an alternative or in-between approach.

Table 1. Farms included and meeting critical performance indicators for circular agriculture; 1 = soil preservation, 2 = closing nutrient cycles, 3 = reduction of greenhouse gasses and ammonia, 4 = producing sustainable energy, 5 = maintenance of biodiversity; 6 = nature conservation, 7 = animal welfare, 8 = animal health, 9 = using residual flows from the food industry, 10 = contribution to regional economy and vitality of the rural area.

Type of Farm	Adaptive or Alternative?	Critical Performance Indicators for Circular Agriculture									
		1	2	3	4	5	6	7	8	9	10
Community farm	Alternative	+	+			+		+	+	+	+
Biodynamic multifunctional farm 1	Alternative	+	+	+	+	+	+	+	+		+
Biodynamic multifunctional farm 2	Alternative	+	+	+	+	+	+	+	+	+	+
Conventional mixed nature inclusive farm	Alternative	+	+	+		+	+	+	+		+
Biodynamic outdoor pig farm	Alternative	+				+	+/-	+	+		+
Outdoor pig farm	Alternative		+		+	+	+/-	+	+	+	+
Farm with special livestock	Alternative						+	+	+	+	+
Organic mixed farm	In between	+	+	+	+	+	+/-	+	+		+
Biodynamic dairy farm	In between	+	+	+		+	+/-	+	+		
Cooperation between conventional arable and livestock farms	In between		+		+	+	+	+/-	+/-	+	+
Conventional broiler farm	Adaptive			+	+					+	
Conventional pig farm 1	Adaptive				+			+/-			
Conventional pig farm 2	Adaptive				+/-			+/-	+	+	

Following an alternative approach by Dutch farmers is neither always nor automatically equivalent to radical rethinking the economy or fundamental change towards sustainability, as discussed in Section 2. This being said does not negate that several “alternative” farmers interviewed clearly state that they have chosen wholeheartedly to move away from traditional farming. Some of these farmers joined a new farmers’ organisation, called the Caring Farmers. This group is clear in its position towards CA: “Circular agriculture is necessary and we are going to do it!”, they proclaim in their open letter to the Dutch Minister of Agriculture [47]. In the interviews many remarks have been made that reflect the vision of the Caring Farmers: Closing nutrient cycles on the smallest possible scale, using as few as possible external inputs, producing your own animal feed and energy as well as striving for reduction of harmful emissions as much as possible.

Conversely, farmers who gave the impression to be more at the adaptive end of the continuum may embrace “disruptive” technological innovations—first of all for reasons of efficiency and lowering cost price, but, at the same time, contributing to CA. Farmers who are in favour of an adaptive approach also express a drive to do things differently (i.e., more sustainably), but within what they consider the constraints of their production practices and business model. To them, economic viability and practical applicability often seem to overrule moral and environmental concerns. Although “alternative” farmers cannot run a farm on idealism alone, but have to earn money too, our interview data reveal that particularly these farmers are both intrinsically motivated and internally extrinsically motivated (i.e., doing something because you believe it is important) [48]. Motivated, that is, to rethink conventional agricultural production, to reduce the number of inputs and to prevent losses as much as possible. They are also motivated to generate added value by repurposing dairy cattle by switching to dual purpose breeds (i.e., breeds that produce less milk but more meat than pure milk breeds), by recycling residuals flows from the food industry or by closing nutrient cycles. In addition, finally, they are motivated to explore and execute circular business activities of various sorts, as Table 1 displays. Next to highlighting environmental sustainability as underlying motivation of circular agricultural activities, also social concerns were addressed in interviews by farmers who find it important to help improve social cohesion or to take care on their farm for people facing difficulties in finding their way in life. Particularly the latter combination of the planet and people dimensions of sustainability brings the notion of eco-social agriculture to mind [49].

4.2. Contrasting and Complementary Approaches

The tension between practice and principles should not be neglected or played down when it comes to CE in SMEs. SMEs with a sincere circular mission should not be expected to be capable most of the time to change into a full-blown circular company all at once. Normally SMEs have to choose their battles rather than being able to implement a CBM that is profitable and perfectly circular. In reality, such a combination is rare and trying to realise it immediately will easily equate bankruptcy. Put into adaptive and alternative terms: some elements of adaptiveness must be part of a sustainable alternative approach (and vice versa: an adaptive approach could result into “alternative” outcomes). As Bengtsson et al. [12] point out: An efficiency approach with a focus on technological improvements is an essential element of a sufficiency approach aimed at reduction in production and consumption volumes and related social and institutional changes. In other words, an efficiency approach may be a necessary condition to transition into more sustainable directions, but it is highly unlikely to be a sufficient condition for bringing required levels of sustainability in consumption and production patterns to solve the social, economic and ecological problems of today and tomorrow. Therefore it is important to distinguish approaches—irrespective of whether we label such contrasting approaches adaptive and alternative, efficient and sufficient, or weak and strong sustainability—but at the same time to search for complementarity. Worth mentioning in this regard is that Jauernig et al. [50] recently argued for trying to find the common ground of different

visions—more specifically here the “agrarian” and “industrial” visions of agriculture—and looking for compatibility rather than accentuating distinction, controversy and incongruence between perspectives. Noteworthy too in this respect are the following words of Göpel [51] (p. 2):

“We should not simply stick the label ‘transformation’ on any amendment to the status quo, or call each technological efficiency gain an ‘innovation.’ If the benchmark for the changes to which we aspire is not radically different to the one that has guided development solutions so far, humanity will not escape those strong path dependencies. At the same time, dismissing the role that incremental steps play in getting there means ignoring the insights that complex system research offers about patterns of change. So juxtaposing the two approaches as entirely separate strategies—a practice often used to discredit someone else’s proposals—does not help. What helps is to keep each other challenged with respect to both the radicalness of the imagined outcomes (what do we deem possible) and the amount of change in this direction that the next, often little, steps could bring (what do we do to make it happen).”

Pointing to complementarity does not imply that “alternative” and “adaptive” farmers—more broadly: SMEs—share the same motives. The interview data suggest that the sense of urgency that drives farmers following an alternative approach to push the limits of CA further, which differs greatly from the adaptive farmers who believe that they already contribute a lot to CA and see hardly any reason to adjust their business management to emerging circular principles. The lesson here for thinking about CE in SMEs more generally is that the deeper mentality, the underlying vision on the role and responsibility of SMEs in addressing the grand challenges of today and in the foreseeable future, is of vital importance to the question whether or not a SME will be (consider itself as) a change agent in the transition to a CE and towards a sustainable society at large. This is all the more important in the light of a recent study by Kirchherr et al. [52] (p. 270), finding that a hesitant company culture may be considered one of the main barriers to overcome in order to accelerate the transition towards a CE.

Author Contributions: Conceptualization, H.D.; interviews and analysis interview data, C.d.L.; writing—original draft preparation, H.D. and C.d.L.; writing—review and editing, H.D. and C.d.L. All authors have read and agreed to the published version of the manuscript.

Funding: This paper is output of the research project Governance in Transition that is part of the research programme Towards a Circular and Climate Neutral Society. This research programme was funded by The Ministry of Agriculture, Nature and Food Quality of the Netherlands.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data sharing is not applicable to this article.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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