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Supportive Business Environments to Develop Grass Bioeconomy in Europe

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Abstract: Grasslands cover almost half of the total European agricultural area and are the source of a wide range of public goods and services. Yet, their potential to produce innovative bio-based products, such as paper and plastic, remains widely untapped. We employ a multiple case study approach and implement the Business Environment Framework by Adamseged and Grundmann (2020) on eighteen alternative grass-based businesses to investigate the interdependencies between these successful business models and their business environments. The subsequent analysis reveals that the deployment of funds and policies to support alternative grass-based products remains low in most regions of Europe. Our findings highlight that aligned funding mechanisms that incorporate and promote the specific benefits generated by grass-producing and grass-processing businesses are key to overcoming the barriers related to the competition of bio-based products with the established fossil-fuels-based economic system. To make alternative grass-based markets more dynamic, increasing consumer awareness through adequate marketing is perceived as an important aspect. Capacity building and alignment efforts need to be strengthened and coordinated at local and higher levels to enable the replication and scale-up of novel grass-based businesses in Europe and beyond.

Keywords: grass; bioeconomy; business environment; bio-based product; innovation

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1. Introduction

The bio-based products sector is one of the priority areas with a high potential for future growth, re-industrialization, and addressing societal challenges [1,2]. At the same time, grasslands are vitally important to European agriculture because of the wide area they cover and the amount of public goods and services they provide [3,4]. Yet, grasslands are only implicitly expressed in the EU Bioeconomy Strategy [5], the Green Deal [6], the Circular Economy Action Plan [7], and the Biodiversity Strategy [8]. Grasslands have been traditionally associated with livestock production and the subsequent delivery of animal-based products, such as milk, meat, cheese, and yoghurts [9,10]. Today, and increasingly so in the future, grass could also be used as raw material to produce a wide spectrum of alternative and innovative products, such as paper, packaging, and insulation materials, while maintaining the ecosystem services provided by biodiversity rich and unused grasslands [11–13]. Despite the urgent need for developing innovative bio-based products using local resources, the full potential of grass remains widely unlocked and alternative grass-based products remain opaque in Europe's economy. This challenge gives rise to the question of what conditions are supportive for businesses based on grass and

green fodder to succeed. Such conditions have scarcely been scrutinized and remain only partly understood.

New value chains for innovative products based on grass resources can provide new business opportunities in rural areas and address a series of societal and consumer needs [2]. However, an increasing body of literature emphasizes that key challenges of emerging bio-based business models are related to their external and surrounding environment [14,15]. As suggested by several researchers [15–17], the significance of the business environments for emerging bioeconomy businesses theoretically and practically is manifold. Hence, it has become a promising analogy in business and innovation studies to describe the complex, dynamic, and interdependent interactions of organizations over time [18,19]. Firstly, the business environment defines the boundaries across which transactions take place between companies and their environment, and determines the extent of the influence of entrepreneurs on their environment [20]. Secondly, understanding the business environments of emerging bio-based industries is essential because an enterprise can only function under certain conditions that can significantly influence its performance [16,17,21]. However, studies have also shown that businesses and other actors can shape their institutional environments with discourse activities and framing, through political coalition building and lobbying, or by strategically influencing collective expectations [22–24]. Hence, from a strategic perspective, understanding such conditions is crucial to develop effective strategies and can help to identify useful resources and business opportunities, assist in planning, and improve the overall performance, growth, and profitability of emerging bioeconomy businesses.

In this study, the Business Environment Framework [17] was implemented to conduct a multiple case study approach and analyze eighteen successful grass-based business cases that produce innovative bio-based products from grass resources. Specifically, we focus on the action situations taking place in the sub-arenas of funding, technology and knowledge, resources and infrastructure, training and education, rules and regulations, market development, and consumer agency. Our aim is to uncover the needs required to support the development of novel and alternative grass-based businesses and their potential replication. These findings could support decision making for entrepreneurs and other actors operating with grass resources in rural areas and help to expand solutions to other countries.

2. Materials and Methods

2.1. Case Study Selection

This study was based on a multiple case study approach [25]. After a large search of grass-based business cases in the web of science, we selected a set of grass-based case studies that were successful and accessible. Case studies were considered appropriate for this study due to the relatively new research field of business environments and of alternative grass-based businesses [26]. The sampling criterion was based on the innovativeness of the business models in terms of the use of grass resources, the key activities for making use of grass resources, the value propositions, products and services provided different from livestock (i.e., not milk, meat, cheese, or other traditional grass-based products), as well as the customer segments, business channels, and revenue streams. Cases were only investigated in areas of Europe where the industry development of traditional grass-based products is higher (see [27]).

Table 1 provides an overview of the business cases, for which we established codes to ensure data privacy. Data from eighteen grass-based companies located in Denmark, Germany, Romania, The Netherlands, Sweden, Spain, and Switzerland were gathered. All cases operate with grass and green fodder as their main feedstock, but exhibit diversity in terms of contextual conditions, conversion processes, end-products, and users.

Table 1. Overview of alternative grass-based products in Europe.

Grass-Based Product	Location	Case ID
Paper	Germany, Romania	1, 2, 7, 10
Fiber Boards (Construction and Insulation)	Germany, Switzerland	1, 14
Straws	Germany	1
Fertilizer (Soil Amendment)	Netherlands, Romania	4, 11
Plastic	Germany	5, 16, 17
Feed Protein	Denmark, Netherlands	6, 15
Bioenergy	Germany, Romania, Netherlands, Sweden	8, 9, 15, 18
Seeds	Denmark	13

2.2. Case Study Selection

Once the business cases were selected, an online semi-structured interview using the Microsoft Forms software (Microsoft Corporation, Washington, DC, USA, Version 2021) was carried out. The interview guideline followed the logic of the sub-arenas of the Business Environment Framework (BEF) and was composed by both open-ended and rating scale questions [17]. The sub-arenas considered were Technology and Knowledge, Resources and Infrastructure, Funding, Training and Education, Consumer Agency, and Institutional Development. The interview guideline is available in the annex. The BEF was selected due to several reasons. Firstly, the framework has a particular focus on businesses operating in rural areas. Secondly, other business environment frameworks, such as the "Ease of Doing Business" by the World Bank [28] or the "Investment climate" [29], focus on rules and regulations and marketing, and neglect other aspects, such as resources and infrastructure, and training and education. Thirdly, in contrast with existing frameworks, such as the DPSIR [30], the sub arenas previously mentioned are not conceptualized as development factors or drivers, but as action situations between the grass-based businesses and their business environments.

Business case representatives provided rich insights concerning the situations external to the business that directly or indirectly affect the development of grass-based businesses in the bioeconomy sector. Each interview took on average one and a half hours. The data collection period was from September 2020 to March 2021. The data collected are of qualitative nature, and we applied a qualitative data analysis using the software ATLAS.ti (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany, Version 9.1.2). Data were coded, labelled, and organized based on the sub-arenas of the business environment framework. A table with the coding scheme is available in Appendix B. We conducted a cross-case analysis [31] to compare the cases in terms of similarities and differences to identify emergent patterns in the business environments of grass-based businesses.

3. Results and Discussion

3.1. Business Environments of Grass-Based Businesses

We found that action situations, particularly in the sub-arenas of institutional development and market development, must be aligned to make the business environments for innovative grass-based businesses more supportive. The empirical information produced in this study provides valuable insights on the business environment for current and successful grass-based businesses and how these businesses mitigate, adapt to, and/or overcome challenges in their respective business environment. An overview of the state of support per sub-arena for the grass-based businesses analyzed is presented in Figure 1.

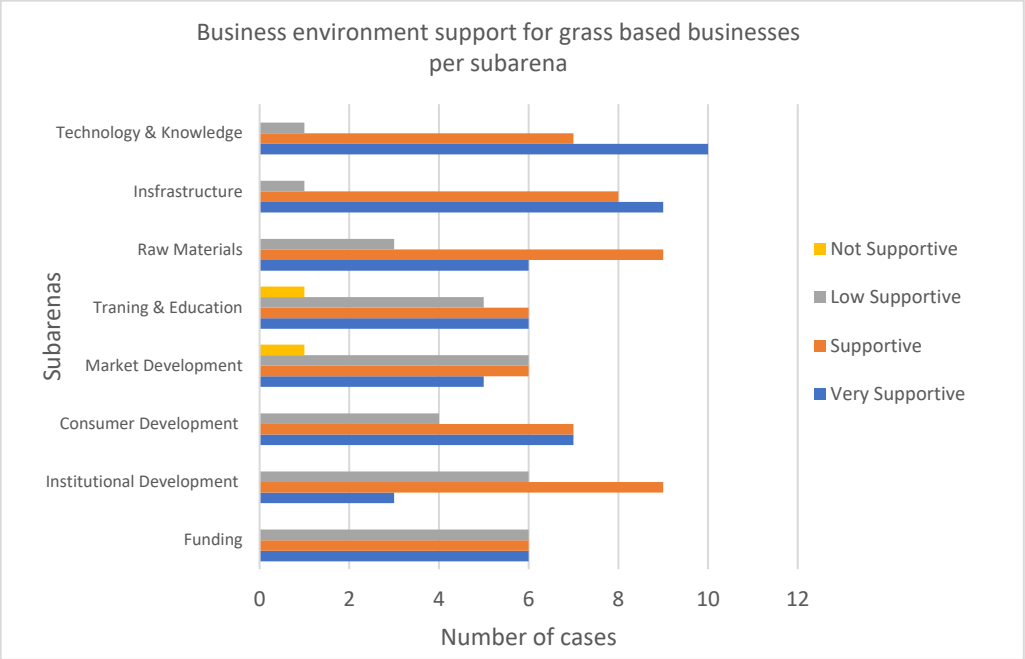

Figure 1. Business environment support for grass-based businesses per sub-arena (n = 18). Source: Our own data from the survey.

3.1.1. Technology and Knowledge

Technological change has been a major factor shaping agriculture in the last 100 years [32,33]. New technologies offer the possibility to transform grass into a variety of value-added products and can provide potential solutions to environmental challenges while sustaining economic growth [34,35]. The access to technology and knowledge was rated by all companies as highly important for producing innovative grass-based products. For the interviewed cases, most of the knowledge and technology needs were related to chemistry and engineering for the specialized processing of grass into specific value-added products. For example, for grass-based paper production, one respondent indicated that "*the business requires technology for improving conversion and biorefining processes and knowledge on how to extract fibres from the raw material in the most efficient way*" (Case #14). Europe is leading research in chemistry around the world, which makes the business environment supportive for the development of alternative grass-based products associated with new technologies. However, our findings highlight that achieving the technical capacity to produce and convert grass into value-added products requires knowledge integration and recombination from different areas. Specific technology and knowledge is not limited to the conversion of grass, but can also be particularly important for its cultivation and harvesting [36,37]. For example, for bioenergy production, "*grass must be shredded in a specific way that allows mixing it with wood chips for bioenergy production*" (Case #18). To deal with this challenge, successful businesses rely on a functioning network and the diffusion of the knowledge through the relevant networks of actors in the system.

Regarding the critical factors for obtaining technology and knowledge, cooperation among different partners is the most recurrent answer. As shown in Figure 2, when asked how the business obtains support for technology and knowledge, the answers varied among: cooperation with universities and research centres (28%), networks (16%), clusters (11%), advisory services (17%), and other types of support (28%), which are linked to cooperations with industry, business partners, museums, and schools.

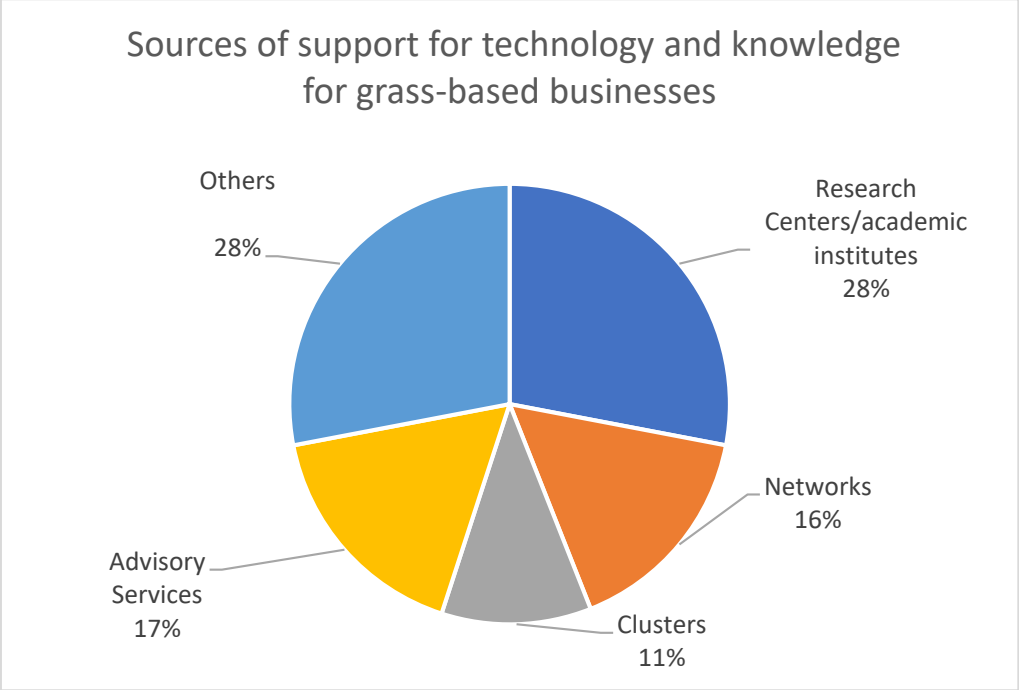

Figure 2. Sources of support for technology and knowledge (n = 18). Source: Our own data from the survey.

Academia has been recognized as an important source of inventions that may result in technologies of commercial significance [38,39]. Research encompasses processes operating at the molecular level and production processes to transform biomass into a wide spectrum of marketable products [40]. However, these inventions often require substantial investments to ensure their market uptake [41]. Transferring technology and knowledge across different fields is pivotal to realize bioeconomy transitions [42]. In this regard, funding research calls that enforce the inclusion of different disciplines and industry partners should be encouraged. The impact of academia and higher education institutions on the bioeconomy will considerably enhance their status and visibility as major players and joint actors over the coming decades [43].

3.1.2. Resources and Infrastructure

A bio-based and circular economy relies on sustainably produced biomass as raw materials for the co-production of various products, including food, feed, materials, chemicals, and biofuels [44]. Hence, the availability and quality of grass are the foundation of grass-based businesses. Grass as a raw material can come from different sources, including surrounding farmers, their own farm, or wasted grass. However, grass resources are not uniformly available across Europe [45]. There are significant differences in production among those regions producing more (West, North, and Central Europe) and those producing less (South and East Europe) [46]. High variability of grassland productivity may lead to the adoption of unreliable grassland management strategies [47]. The aforementioned aspects indicate more supportive business environment, for example, in contexts where grass is strongly lignified and/or with lower nutritional value for animal feed production, or where big amounts of unused grass is available (e.g., roadsides). Understanding the distribution of grass production and quality in Europe is key for the replicability of successful alternative grass-based business models. Nevertheless, the majority of business representatives (88%) consider the business environment very supportive in relation to access to raw materials, while only 12% answered that the business environment was low supportive.

In line with previous research [48], the interviewees indicated that seasonal and annual grass production variability may affect the business performance. Moreover, some products have increasing demand, which makes companies search for alternative sources and suppliers. To deal with these challenges, a close collaboration with local farmers was reported as a necessary condition for the success of the business. Farmers are at the heart of grassland production, and little can be accomplished with their commitment and support [49]. On the other hand, processor companies can re-engineer and impart new application capabilities to grass resources. Realizing such synergies may result in a win–win situation for farmers and processor companies.

Sustainable mobilization of sufficient and good quality biomass is essential to build the bio-based economy. Recent research has shown that difficulties in mobilizing biomass is one of the main barriers that hamper the development of bio-based supply chains [50]. However, when asked regarding the access to relevant infrastructures, such as roads, forms of communication, access to water, and other resources, 95% of the interviewees found the business environment supportive. This is clearly related to the good systems of infrastructure existing in the interviewed countries, but may be also associated with the fact that companies are established in areas where all these infrastructures are readily available. As shown in Figure 3, most cases highlight road networks for transportation as the most relevant infrastructure, followed by telecommunications, which refers mainly to internet connections. Several cases also mentioned the need for storage sites.

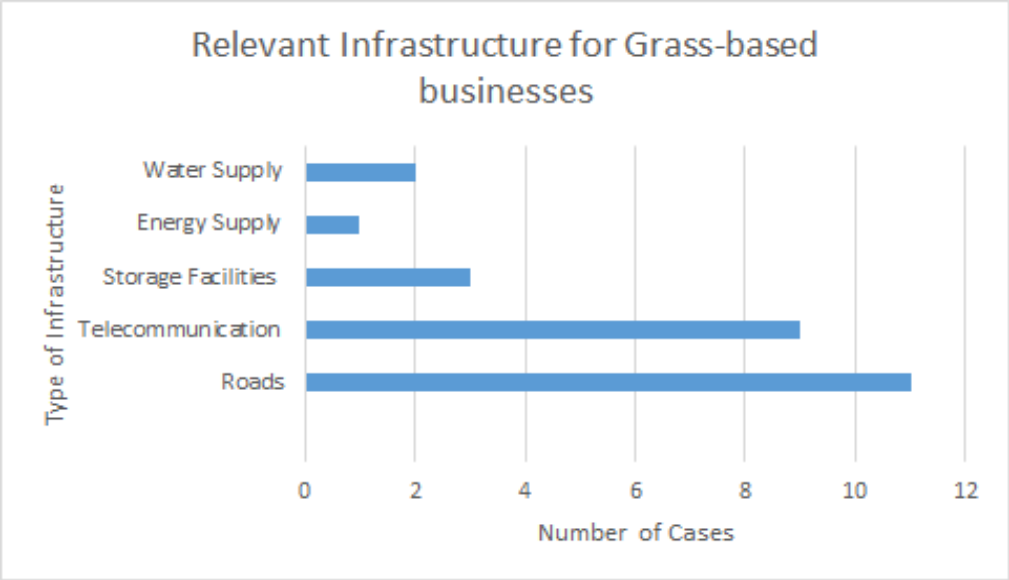

Figure 3. Relevant infrastructures for grass-based businesses (n = 18). Source: Our own data from the survey.

Overall, respondents answered positively regarding the infrastructure available. Even though the business cases investigated operate in rural areas, where grass resources are usually located, the results show a positive perception regarding relevant infrastructure.

3.1.3. Training and Education

Training and education are required to design a bioeconomy that fits the regional potentials [42]. The majority (70%) of the interviewees declared that the business environment is supportive or very supportive in providing training and education opportunities, while 30% found it not supportive or low supportive. As new business opportunities emerge, the needed knowledge might exceed the competencies of traditional business models. For this reason, the businesses analyzed take part in different training and education activities, as can be seen in Figure 4. Collaboration with universities and research centers appeared as a

recurrent theme in this sub-arena. One company stated that *"training and education is easy to obtain thanks to their close connection with the local university"* (Case #9).

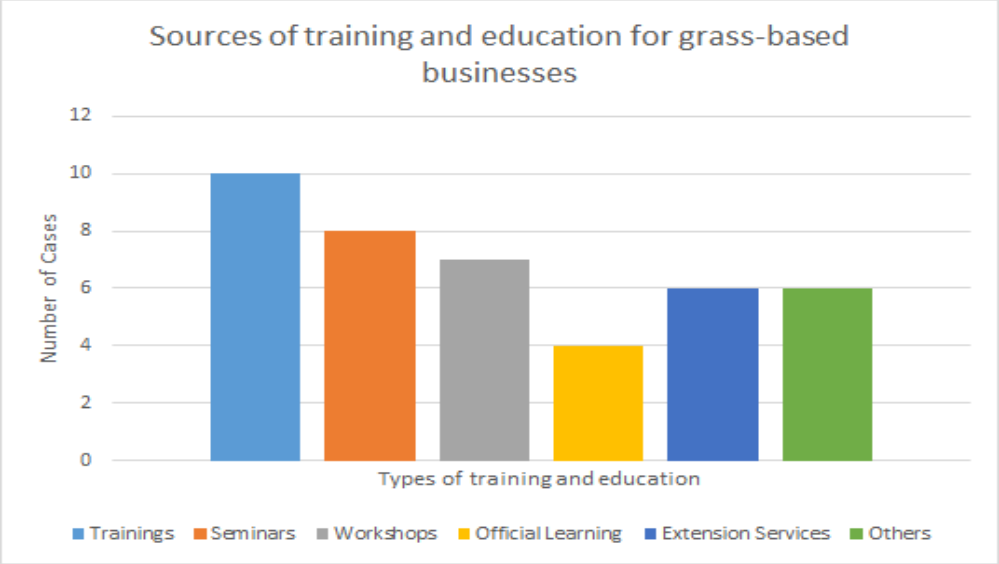

Figure 4. Sources of training and education activities for grass-based businesses (n = 18). Source: Our own data from the survey.

The lack of skilled workforce has been recognized as a factor affecting bioeconomy development [51]. This triggers several challenges related to the development of the bio-economy and knowledge generation in converging industry fields [42]. Successful businesses overcome these challenges through several training and capacity building programs. Nevertheless, the development of focus groups on grass bioeconomy will be of very high value, as well as the promotion of operational groups within the EIP-AGRI framework with regard to this topic.

3.1.4. Market Development

Even if the technologies and the products are fully developed, there is still the challenge of commercialization and market diffusion to be overcome [52], particularly in the case of emerging, but yet underdeveloped markets [53]. Regarding the support for market development of grass-based products, 65% of the cases found the business environment to be very supportive or supportive, 29% found it low supportive, and only 6% found it not supportive at all. According to our empirical observations, support for market development is mainly associated with legislation changes and sustainability requirements. The urgent need for replacing fossil-based with bio-based products is a significant factor shaping market structures that can favor grass-based business models. For example, one case reported that *"markets are slowly evolving and favouring bio-based products. There is a win–win relationship with EU financial resources to continuously innovate and improve our processes and products, which in turn improves our market integration"* (Case #17).

The most critical factors for market development are related to the specific business models and the willingness of consumers to select their specific grass-based products. One case reported that *"new innovative products need market acceptance and to compete with the price from the fossil fuel production of the fertilizers can be challenging"* (Case #4). As shown in Figure 5, an increased awareness for sustainable bio-based products is fundamental for the market development of grass-based businesses. Likewise, the representatives call for further promotion of bio-based products, strategic partnerships, and the creation of clear rules and regulations that can guarantee clean and sustainable products. Product certification was also mentioned as a critical factor for business performance. Climate

change and the pressing need to fulfill sustainability requirements were also reported as external factors shaping market structures.

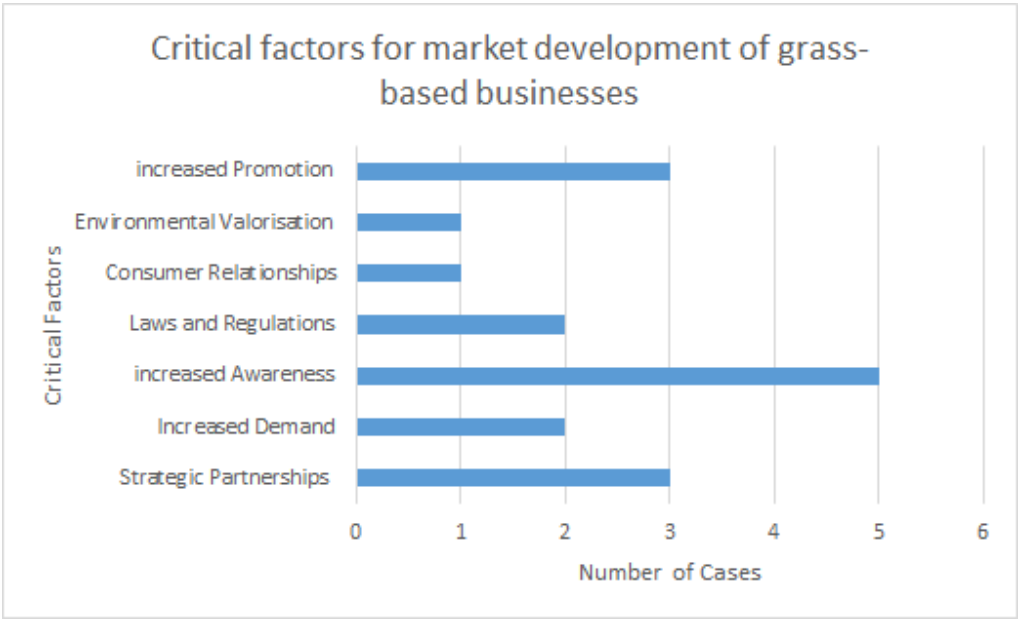

Figure 5. Critical factors for market development of grass-based businesses (n = 18). Source: Our own data from survey.

Our empirical cases highlight the ongoing competition of bio-based products against the established economic system relying on fossil resources. Firstly, competing with the extant fossil-based industry requires foresight and sophisticated strategic management [54]. Secondly, to achieve market diffusion, customers need to accept the product and the associated technologies [55]. Since there are still gaps in relation to the knowledge of risks and benefits of new businesses and technologies, product certification could contribute to address this challenge. Providing clear information on the usability, production methods, and the materials used in the production of grass-based products could have a positive impact on consumer' awareness and their willingness to pay for more sustainable products.

3.1.5. Institutional Development

The agricultural economic literature on innovation clearly documents that innovations do not occur randomly, but rather that incentives and government policies affect the nature and the rate of innovation and adoption [50,56]. In this regard, only 17% of the interviewed cases found the business environment for institutional development very supportive, compensated by the 50% that found it supportive. However, 33% found the business environment for institutional development low supportive. Grasslands are covered in recently deployed bioeconomy strategies, including the Green Deal initiative [6] and the Biodiversity Strategy [8], making grasslands more attractive for farmers than before. A common objective is the development of circular economies and sustainable supply chains to ensure that products are sustainable and competitive in the global market [44]. However, while our empirical observations reveal that some biogeographical regions have designed policies to support the bio-based economy development, most companies argued that there is not enough support for innovative grass-based products and that they still experience barriers related to inefficient and ineffective policy frameworks and instruments. In this regard, it has been suggested that some institutional and structural barriers are deep-rooted and still favor linear models and that lack of governmental support appears as ineffective taxation policies, funding, and royalty regimes [14,15]. This seems to contradict bioeconomy policies at EU and global level that aim to promote alternative grass-based

products. The discrepancy between the existing institutional and support framework and the level of support perceived by enterprises in the sector can be attributed, among other things, to low efficiency and high transaction costs in the implementation of the measures.

Our findings concur with previous research that stated that stricter environmental regulations can lead to adverse effects on productivity and increase the pressure for companies to find alternatives and change their business models [57]. However, restrictions and regulatory frameworks can also challenge the development of new innovations [58,59]. For example, a lack of long-term regulatory frameworks can lead to uncertainty and short-term investments [60]. Moreover, a too strict regulation at the early phase of development discourages the development of innovations [61]. This is true for the case of grass-based soil amendments, which are not accepted for large-scale applications and a concrete regulatory framework is still not in place (Case #11).

To make the business environment more supportive for grass-based businesses, practitioners call for clear regulations that specifically support the developing bio-based industry. The interviewees also call for support schemes, product protection, alignment with EU goals, and institutional communication. When asked how the business environment for institutional development could be more supportive, one case argued that "*support schemes for the promotion of biogas production, such as subsidies, loans on advantageous terms, financial aid, European/national funds, and tax reductions, could make the business environment more supportive*" (Case #10). This feeling is supported by another case, which stated that "*measures to promote grass-based products could be implemented by the state with minimal budget investments and would have big economic and environmental impacts*" (Case #11). Other critical factors relate to administrative procedures, such as the needs to register the business and operate as a legal entity. No specific rules or regulations were mentioned on this matter.

3.1.6. Consumer Development

Interviewees argued that there is still much room for improvement in terms of consumer awareness and perception for sustainable products. The majority (70%) of the interviewed companies think that consumers have to change their values and preferences towards bioeconomy products including grass-based alternative products. This is in line with previous research [55], which demonstrated that consumer demand for biobased products depends on the awareness, knowledge, and understanding of the concept of bio-based products, the perception of the product, usability, production method, and the proportion of renewable materials used in the bio-based product. One case reported that "*awareness and willingness to invest into products which have a higher value in terms of energy efficiency and climate change is increasing*" (Case #14). Moreover, enterprises may also have the capacity to influence or change consumers' agency, but only to a very limited degree, since other actors in the business environment can also greatly influence the consumers' agency.

To make the business environment more supportive towards changing consumer preferences and values, interviewees argue the need for more media coverage and awareness campaigns. Additionally, consumer acceptance can be advanced by the involvement and investment of the state to promote the use of bio-based products. Moreover, high prices are often a barrier for the mass-market appeal of sustainable products [61]. Hence, a fundamental aspect for emerging bioeconomy businesses lies on improving the price competitiveness of sustainable products and services compared to their fossil-fuels-based counterparts. For the case of grass-based protein, agricultural producers and other end-users should share values and missions with regard to the urgent need to reduce soy imports and global GHG emissions. One case claimed that "*consumers' demand for products without soy feed are rising and supporting the development of local, sustainable products. Consumers are however not very much aware of these issues (some are), and more information may support the development*" (Case #7).

The acceptance by the public is crucial to make sure bio-based products are taken up by the market [62]. The public's resistance to change is a barrier related to consumer awareness and is a barrier that requires policy measures to overcome [52]. Many products

are still in a developmental stage and quality is not yet at the quality level of fossil-fuels-based products [59]. Hence, the lack of confidence of consumers in the product is also hampering the market uptake of bio-based products [63]. Policy instruments to overcome the barrier of lack of consumer awareness and limited market uptake are public campaigns, provision of information on sustainability performance, quality control, public procurement, quality assurance, and product standards [2,59,63]. Overall, to make sure sustainability performance is correctly communicated, there is a need for uniform systems and adequate labelling linked to the high-quality bio-based products and their verified sustainability.

3.1.7. Funding

As shown in Figure 6, all interviewed companies have access to financial sources, being grants the most used type of funding (41%), followed by the access to credits (22%), private investments (15%), crowdfunding (4%), and others (18%), such as bank loans, own sources, and/or government subsidies.

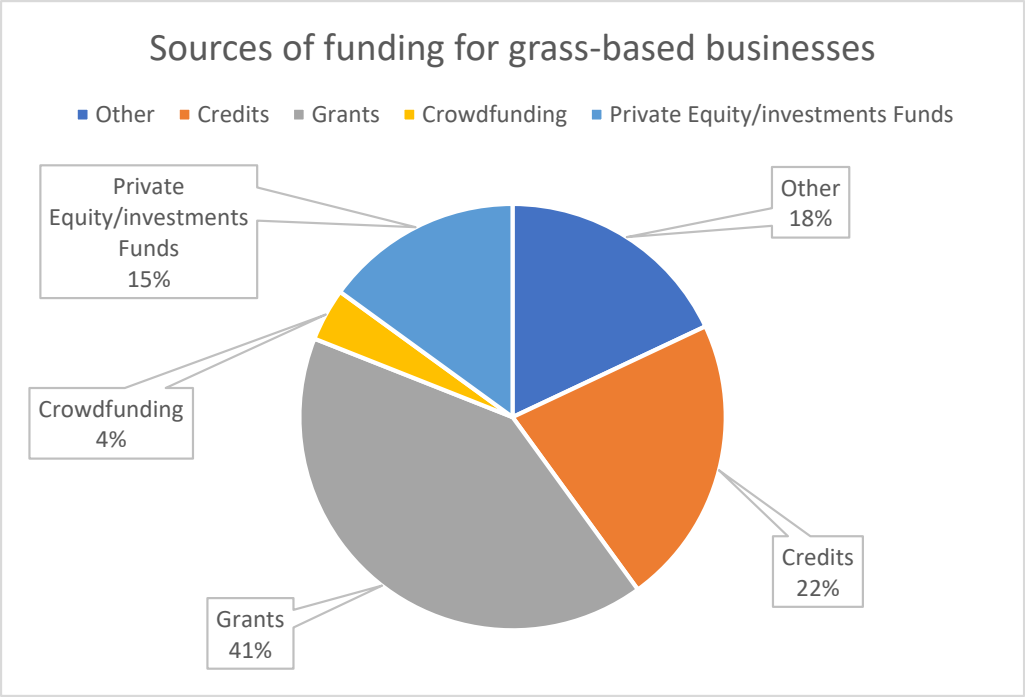

Figure 6. Sources of funding for grass-based businesses (n = 18). Source: Our own data from the survey.

It is relevant to note that most of the interviewed companies are based in countries such as Germany, in which funding opportunities for R&D and bio-based products are promoted. However, as stated by one case, "*a clear alignment with EU goals is critical for acquiring support*" (Case #17). Furthermore, a lack of direct funds to promote alternative grass-based products at the European level was reported as missing or mis-aligned. For example, funds provided for livestock grass-based products through the animal head payment within the coupled payments establishes an unfair competition for the use of the grass in the livestock farms. Some countries (e.g., Germany) have a more supportive environment because the coupled payments are currently not active.

Grass-based businesses may benefit from general funds for the establishment of bioeconomy business models through, for example, those related to investments (Measure 4 of the CAP), farm and business development (Measure 6), or Infrastructures (Measure 7). Further to this, businesses rely on other sources of funding in addition to public funding. The provision and coordination of funding for innovative and often risky activities from

different sources requires particularly good coordination of transactions among actors from different sub-arenas. Aligned funding mechanisms that incorporate and promote the specific benefits generated by grass producing and processing companies are key to overcoming the competition with the established fossil-fuels-based conventional products and services.

4. Challenges and Limitations

With the expected climate change and increased emphasis on sustainable agriculture, it can be expected that services, goods, and functions of grasslands will become more important [64,65]. The potential benefits of multifunctionality in grassland agriculture to provide a diverse number of products and ecosystem services has been recognized in the literature [66–68]. Yet, a key challenge for grassland farming is to design production systems and management measures in such a way that the multiple functions and services are adequately fulfilled or provided [69,70]. Due to the complexity of socio-ecological systems and the interdisciplinary nature of sustainability sciences [71], a thorough consideration of the social, economic, and environmental contexts [72] is required to achieve well-contextualized and adapted solutions. In this regard, stakeholder engagement through a multi-actor approach can prove useful in shedding the light on potential conflicts, such as disputes on historical agricultural practices or traditional uses of grass. These will facilitate the decision-making process towards the uptake and implementation of future rural business models. Grass-based innovations are taking place at different levels, and as the demand for sustainable raw materials and products increases, so does the need of monitoring systems that enable the measurement and assessment of bio-based supply chains and their implications for sustainability [73].

Our results can be considered as a preliminary step in understanding business development of the grass bioeconomy in Europe. The small sample size (18) limits the possibility of generalising our findings. Nonetheless, due to the diversity of the sample, the study provides a valuable overview of the business environments for a variety of innovative grass-based businesses in different countries of Europe. The growing significance of grasslands underlines the necessity of further qualitative and quantitative research on the co-evolution of emerging grass-based businesses and their business environments.

5. Conclusions

To the best of our knowledge, this is the first study to explore the development of grass bioeconomy in Europe from a business environment perspective. We make two main contributions to the extant literature. First, to the growing literature on bioeconomy transitions, we provide a systematic overview on the business environments of emerging alternative grass-based business models and the action situations that influence emerging businesses in the bioeconomy. The second contribution is to managerial practice. The insights and empirical information provided can help firms and rural entrepreneurs in decision making by identifying opportunities and barriers for grass-based businesses. If coupled with a collaborative design of future assessments together with stakeholders, the advances illustrated in this paper could inform future sustainability-related processes and support rural business developers and decision makers to build equitable and sustainable futures.

6. Recommendations

From the results obtained, we can suggest the following set of recommendations for grass companies and administration.

Alternative grass-based businesses should take into account the region of Europe where it is going to be established, as this fact determines the grass availability and quality associated with conditions of the natural environment. Consider the potential competition with current grass-based products associated with livestock production and the existing infrastructure. From this perspective, the areas of the West, Central, and North of Europe are more adequate to produce alternative grass-based products with optimal grass supply

from abandoned grasslands or low-quality grass (e.g., waste grass and roadside grass) compared with the South of Eastern Europe. Capacity building and innovation programs, such as those linked to the EIP-AGRI, are required to foster an adequate environment for researchers and entrepreneurs to innovative. Finally, the cost-effectiveness of grass-based businesses should be facilitated through consumer awareness campaigns and adequate funding mechanisms to balance the competition with the established fossil-based economy.

Author Contributions: Conceptualization, all authors; methodology, all authors; software Microsoft forms (2021), Atlas.ti (Version 9.1.2), R.O. and J.R.; validation, all authors; formal analysis, all authors; investigation, all authors; data curation, R.O. and J.R.; writing—original draft preparation, all authors; writing—review and editing, all authors; visualization, R.O.; supervision, M.R.M.-L. and P.G.; project administration, P.G.; funding acquisition, P.G. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Business case survey topics and questions

- Name of the business
- Grass-based product
- Biogeographical area/city/country
- Contact Information

Technology and Knowledge

- What kind of technology and knowledge does the business require?
- Can you rate the importance of this technology and knowledge for the business case?
- Is the business environment supportive for technology and knowledge development?
- Can you rate the level of supportiveness?
- What are the main sources of support for technology and knowledge?
- What are the critical factors for acquiring the technology and knowledge needed (from these sources) for starting and running your business?

Funding

- Have the businesses within the value chain access to financial sources?
- What are the main sources of funding?
- Which sources of funding are not reflected that could support the different businesses within the value chain? Please, justify your answer
- How do you rate the level of supportiveness of the business environment for funding?
- Which factors do you consider critical to obtain the necessary funding to start and run the business? Please, justify your answer

Resources and Infrastructure

- How important is the supply and access to raw materials/resources for the business?
- What/who are the main sources of the raw materials?

- What are the critical factors for acquiring the raw materials/resources?
- How supportive is/was the business environment supportive the business to access these raw materials/resources? Please, justify your answer to the previous question
- What kind of infrastructures such as roads, forms of communication, water supply and/or other facilities are particularly relevant for the business to operate? Please, justify your answer
- Could you rate the importance of these infrastructures for the business case?
- What are the critical factors for acquiring the infrastructures?
- How supportive was the business environment supportive the business to access these infrastructures? Could you please justify your answer to the previous question?

Training and Education

- Does the business require more training and education?
- What type of training and education activities/programs support the business? What is missing?
- How supportive is the business environment in providing training and education opportunities?
- What are the critical factors for acquiring the training and education?

Market Development

- Does the business environment support the market development of the business?
- What external factors or elements have had the strongest impact on the development of your business when it comes to market structures? Please, justify your answer
- How do you rate the importance of this market development for the business case?
- How do you rate the support from the business environment on market development? Please, justify your answer to the previous question.
- What factors are required for the market development of the business? Please, justify your answer

Institutional Development

- What critical rules and regulations does your business need to fulfill to register and operate as a legal entity? Please, include *regulation identification and *original and *English translated tittle. Also *link in English if possible. (E.g., Directive 2000/60/EC—Marco comunitario de actuación en el ámbito de la política de aguas—Framework for Community action in the field of water policy—https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:l28002b&from=ES accessed on 18 February 2021).
- How do you rate the support from the business environment for institutional development?
- Could you please justify your answer to the previous question?
- What are the critical factors for acquiring the needed support for institutional development (rules and regulations) for your business? Please, justify your answer

Consumer Development

- Does the business require a change in consumers values and preferences?
- Could you please highlight and explain the external factors critical for shaping consumers values and perception?
- How do you rate the support of the business environment for consumers development? Could you please justify your answer to the previous question?
- Could you please highlight the critical factors for acquiring the support on changing consumer preferences and values? Please, justify your answer

Appendix B. Coding Scheme in Atlas.ti

Category	Description	Example
Institutional Development	Rules and regulations related to grasslands and grass-based business models	"The ban on single use plastics is very supportive for the development of our business." (Case #4)
Funding	Access to financial capital required for business development	"We received funding from the EU funded ECO Innovation project and other private investors." (Case #6)
Market Development	Transactions between the enterprises and their customers	"Our strategy is to focus on long-term relationships with customers by providing after sale services." (Case #6)
Consumer Development	Actions and interactions that shape individuals, organizations, and societies to make decisions towards bio-based products	"Growing demand for lightweight and innovative packaging with eco-friendly and recyclable product specifications." (Case #2).
Technology and Knowledge	Generation of knowledge and dissemination of technical processes and tools.	"The business requires technology for improving conversion and biorefining processes and knowledge on how to extract fibers from the raw material in the most efficient way." (Case #14).
Resources and Infrastructure	Availability of grass and basic physical structures	"Price and quality are highly influenced by distance. Usually a distance of 10 km distance from our raw material is expected." (Case #7)
Training and Education	Development and transfer of skills that enhance the competitiveness of the business	"Expansive know-how is always required to improve our technologies and production systems." (Case #1)

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