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Sustainability entrepreneurship to address large distances in international food supply

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Abstract

International food supply is often associated with negative externalities including injustices across the economic value chain favoring trade over production and processing, significant transport-related greenhouse gas emissions, and poor working conditions in the regions where food is being produced or processed. Relevant proxies for this situation seem to be *large distances*, specifically, large *geographical* and *relational* distances. Sustainability entrepreneurship demonstrates innovative practices to address large distances in international food supply. We describe five entrepreneurial solution approaches and illustrate them with empirical cases to facilitate learning across cases and support wider adoption of these practices. Our study provides food scholars, entrepreneurs, and businesses with evidence and insights on how to foster sustainable food supply through overcoming large distances.

KEYWORDS

innovation, international community-supported agriculture, proximity, relationships, solidarity, sustainability transformations

1 | INTRODUCTION

Large distances in international food supply can be associated with substantial negative externalities. Large *geographical* distance between producers, processors, retailers, and consumers requires, for instance, long transportation, causing significant emissions and pollution (Hua, Cheng, & Hwang, 2018; Prell, 2016). It also hinders people involved in the food supply chain to connect with each other (Fonte 2008), which makes it difficult to build relationships and trust (Kneafsey et al., 2008; Wadsworth, 2001). Current global food supply is mostly characterized by anonymity and disconnection (Wiskerke, 2009). This large *relational* distance often correlates with high livelihood risks, unfair wages, externalization of costs, and poor working conditions in the regions where food is being produced (Clapp, 2015; Lebel et al., 2008).

From a local food economy perspective, short food supply chains (SFSCs) is one promising approach that aims at overcoming large distances and contributing to sustainable development (Galli & Brunori, 2013; Kalfagianni, & Skordili, S. (Eds.)., 2019; Renting, Marsden, & Banks, 2003). Sustainability efforts in international food supply so far have mostly focused on incrementally improving existing systems with modest progress towards sustainability (Folinas, Aidonis, Malindretos, Voulgarakis, & Triantafillou, 2014). Eakin, Rueda, and Mahanti (2017) analyzed changes in telecoupled food systems in Mexico and Columbia. Focused on food system governance, their study showed that acknowledging distal interactions and feedbacks, for example, political and social relations of involved actors as well as resource flows, can offer opportunities to change governance structures and create positive impacts on food and livelihood security. Other studies have indicated that consumers are getting increasingly interested in learning about the origins of the food they eat and to connect to the people who produce and process it (Dowler, Kneafsey, Cox, & Holloway, 2009).

However, little attention has been paid, so far, to emerging *entrepreneurs* and their *solution approaches* that aim at overcoming large geographical and relational distances to advance sustainability of food supplies. The present study addresses this void by asking the question: *What are entrepreneurial solution approaches to overcome large geographical and relational distances in international food supply to foster sustainability?* We describe five approaches and illustrate them with empirical cases, using a convenience sample with most enterprises located in Germany. Our study provides scholars, entrepreneurs, and businesses with evidence and insights on how to foster sustainable food supply through overcoming large distances.

2 | LARGE DISTANCES AND SUSTAINABILITY CHALLENGES

We reviewed the literature to identify several sustainability challenges of international food supply. Large distances cause and/or drive some of these challenges, in particular, large geographical and relational distances (Eakin et al., 2017; Princen, 1997).

Geographical distance is the physical distance between actors in the supply chain, in particular, between food producers and consumers. The term does *not* refer to the number of participants in the supply chain, which is often labeled as "supply chain length." From a sustainability perspective, negative effects of *large geographical distances* in food supply include:

- Greenhouse gas (GHG) and other harmful emissions due to long-distance food transportation. For example, about 80% of all traded goods by volume are transported in container ships (UNCTAD, 2018), the majority still using heavy fuel oil causing emissions of CO_2, SO_2, NO_x, and particulate matter (Hua et al., 2018). These negatively affects human health and contribute to climate change (Eyring et al., 2010).
- No/low awareness of negative environmental and social impacts due to geographical disconnection between food consumers and the regions of food production and processing (Luna, 2008; Princen, 2002).

Relational distance is the lack of strong relationships among supply chain actors. Strength of relationships is here determined by knowledge and care about each other (Kneafsey et al., 2008). From a sustainability perspective, the negative effects of *large relational distances* in food supply include:

- Injustices in the food value chain, with most value generated in the countries of consumption, leading among other things to unfair food prices that provide insufficient livelihoods to people along the supply chain (Kalfagianni, 2019; Swinnen & Maertens, 2007).
- Unequal distribution of risks, with most risk resting with food producers (Isakson 2014).
- Undemocratic governance and power relations with food producers having no/little opportunity to participate in decision making and governance (Hendrickson, Wilkinson, Heffernan, & Gronski, 2008).

Mitigating the above-mentioned negative effects by overcoming large distances can, if designed carefully, foster sustainability. SFSCs are one promising approach that involves both domains of distance (Kalfagianni & Skordili, 2019; Renting et al., 2003). They are characterized by geographical proximity (local); by a small number of intermediaries involved; and by authenticity and trust mediated through personal interactions (relational proximity). There is evidence about SFSCs' potential to foster sustainability (Galli & Brunori, 2013), for example, through rural development and economic regeneration (Renting et al., 2003) or social changes towards healthier eating habits (Kneafsey et al., 2008). Recently, SFSCs have been discussed in international food supply activities (Kalfagianni, 2019). However, the link between environmental effects of SFSCs is controversial (Born & Purcell, 2016; Brunori et al., 2016). Thus, it is important to consider the specific conditions under which reducing large distances can contribute to sustainability.

In the next section, we use sustainability literature to formulate principles for reducing large distances (or promoting SFSCs). We also use the *Framework for Strategic Sustainable Development* (Broman & Robèrt, 2017) to discuss potential adverse effects of SFSCs. Specifically, we review if any of the practices of reducing large distances increases *concentrations of substances extracted from the Earth's crust*, for example, fossil carbon, *concentrations of substances produced by society*, for example, NO_x, or *degradation by physical means*; as well as if they contribute to structural obstacles to *health*, *influence*, *competence*, *impartiality*, or *meaning making*. Furthermore, we additionally reflected on the principle of intragenerational justice for principles where this is of relevance (see, e.g., Gibson, 2006).

3 | APPROACHES TO ADDRESS LARGE DISTANCES

Innovative practices in sustainability entrepreneurship address sustainability challenges of international food supply by mitigating negative effects of and overcoming large distances. We reviewed literature on and empirical cases of these practices. We clustered them into five entrepreneurial solution approaches and specified each of them through a set of sustainability-oriented design principles (P1–P12; Figure 1).

The approaches represent practices of entrepreneurs which are "less oriented towards management systems or technical procedures, and focus more on the personal initiative and skills of the entrepreneurial person or team to realize […] market success and societal change with environmental or societal innovations" (Schaltegger & Wagner, 2011, p. 226). We define sustainability entrepreneurship as a practice of "finding and implementing innovative solutions to

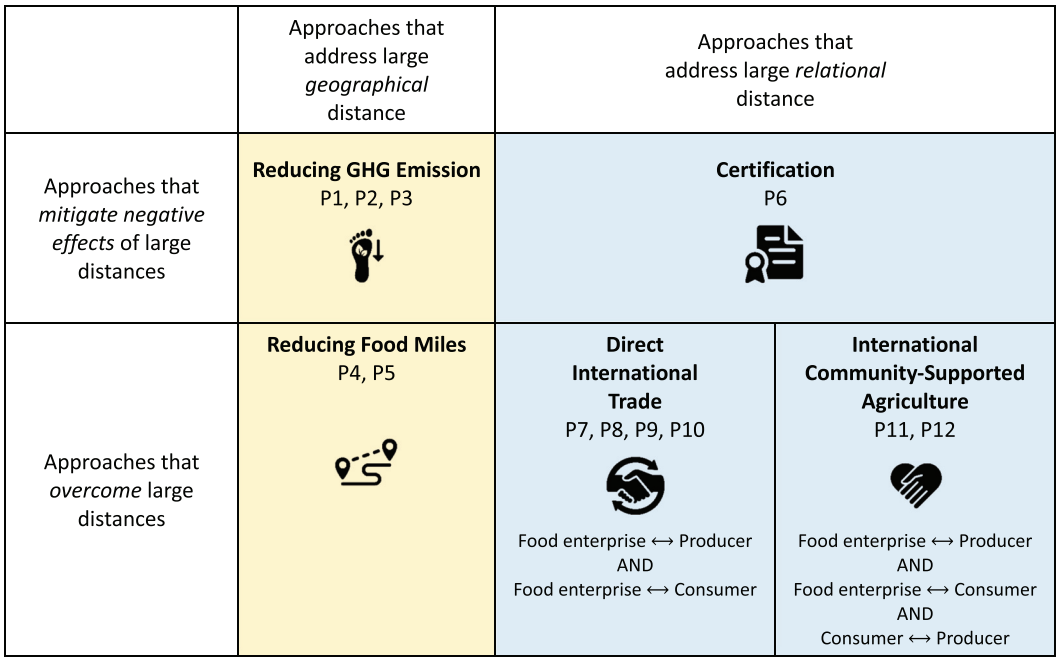

FIGURE 1 Entrepreneurial solution approaches to overcome large distances in international food supply with corresponding sustainability principles

address social, economic and ecological shortcomings" (Schaltegger, Beckmann, & Hockerts, 2018, p. 5) and "to realize [...] market success and societal change" (Schaltegger & Wagner, 2011, p. 226).

The set of design principles is the result of an iterative process between reviewing conceptual literature and analyzing empirical cases, mostly from Germany. Two approaches address large geographical distances (yellow), and three approaches address large relational distances (blue).

3.1 | Reducing GHG emissions

This approach mitigates negative effects of large *geographical* distances, that is, it reduces GHG emissions through using renewable energy sources for long-distance transport and/or offsetting emissions, and/or displays information about geographically distal regions (to influence consumer choices).

The corresponding principles are summarized in Table 1.

3.2 | Reducing food miles

This approach contributes to overcoming large *geographical* distances by substituting an internationally sourced food product with a locally produced one or by securing a supplier in closer geographical proximity. The guiding principle is to source most ingredients and food items locally.

The corresponding sustainability principles are summarized in Table 2.

3.3 | Certification of international food products

This approach addresses large *relational* distances by using certification, for example, provided by the Fairtrade Labelling Organization, to mitigating adverse effects, such as low prices and poor working conditions. Food enterprises that source food products internationally "outsource" the relationship building with food producers to certification agencies (Figure 2). Food enterprises are not in direct contact with food producers and do not necessarily know where the premium price is invested.

The corresponding sustainability principle is summarized in Table 3.

3.4 | Direct international trade

This approach addresses large *relational* distances by creating caring relationships between supply chain actors, for example, through adding value in the country of origin, directly sourcing from producers with as little intermediaries as possible, negotiating and paying fair prices *on the basis of needs*, and/or supporting local social-ecological projects. Caring relationships entail getting to know the partners, communicating regularly with them, appreciating their products and services, looking out for each other, and recognizing each other's needs. This approach builds relationships between the food enterprise and food producers as well as between the food enterprise and food consumers (Figure 3). Compared with the previous approach, here, food producers and food enterprise can jointly identify and select investments.

TABLE 1 Sustainability-oriented design principles underpinning the approach "reducing GHG emissions"

	Design principle (P)	Description and sustainability justification	References
Reducing GHG emissions	P1—Use renewable energy sources for long-distance transport	Using renewable energy sources instead of fossil fuel for long-distance transportation, such as sailboats for over-sea transport, electric trucks using solar or wind power, or trains. For short-distance transports, bikes can also be an option. Substituting fossil-fuel-based transportation through renewable energy sources, reduces CO_2 emissions and other harmful substances, and contributes to healthier ecosystems and people's health. Provision of renewable energy, including material sourcing, for example, for solar cells, should not systematically deplete natural resource stocks and/or increase GHG emissions beyond critical thresholds. Provision of biofuels should not systematically compete with food production.	Accorsi, Cholette, Manzini, Pini, & Penazzi, 2016; Teeter & Cleary, 2014
	P2—Offset GHG emissions	Offset remaining CO_2 emissions caused by transportation and energy imports through different measures, for example, supporting reforestation projects. Offsetting GHG emissions can have a positive effect on climate change, even if it does not mitigate emissions completely (contributing to resource maintenance and efficiency). Offsetting should not systematically increase the absolute amount of GHG emissions (rebound effect) beyond critical thresholds.	Accorsi et al., 2016; Kilian & Jiménez, 2012
	P3—Display information about geographically distal regions	Display information about environmental, cultural, and socioeconomic conditions of the region of production and/or processing site, for example, on product packaging and/or through other (social) marketing channels. Displaying and sharing information helps to raise awareness of consumers about the geographically distal region of production and processing, including its environmental, cultural, and socioeconomic conditions. It also raises awareness regarding negative or positive impacts in the region. The intention is to inform consumer choices towards sustainability and thereby reducing GHG emissions. Information provision needs to be ethical (no "greenwashing"). Modified product packaging and other marketing should not contribute to systematic depletion of natural resources, for example, use of nonrecycled paper or plastic, and/or increase GHG emissions beyond critical thresholds.	Aprile, Caputo, & Nayga, 2012; Leire & Thidell, 2005

TABLE 2 Sustainability-oriented design principles underpinning the approach "reducing food miles"

	Design principle	Description and sustainability justification	References
Reducing food miles	P4—Substitute internationally sourced food products	Substitute usually internationally imported food products by producing a different food product with similar properties (e.g., having similar nutrition properties, e.g., line and chia seeds, or fulfilling similar consumer needs, e.g., beet sugar instead of sugar cane). These food products can be produced either locally or by partners located in countries that are as close as possible to each other. Substituting reduces long transportation and with that SO_2, NO_x, and CO_2 emissions. It also fosters the local food economy and provides livelihood opportunities for farmers in the region. Supply of substitute products should not degrade the environment (e.g., through conventional farming) or tolerate poor working conditions (e.g., unfair payment).	Awater-Esper, 2018; Gómez-Luciano, Rondón Domínguez, González-Andrés, & Urbano López De Meneses, 2018
	P5—Select food providers located closer	Reduce food miles along the entire supply chain through selecting partners located in countries that are as close as possible to each other. The most radical way would be to produce internationally imported food products locally by, for example, using sustainable food producing architecture or appropriate varieties. Apart from lowering air pollutants (e.g., SO_2 and NO_x) and CO_2 emissions due to less transportation, reducing food miles also makes it easier to connect with other supply chain actors (condition for overcoming large relational distance). Selection criteria should also include sustainable farming practices and good/fair working conditions. Local food providers should not systematically deplete natural resources, for example, through heating/cooling with non-renewable energy sources, and/or contribute to increasing GHG emissions beyond critical thresholds.	Fiedler & Jeschaunig, 2018; Gómez-Luciano et al., 2018

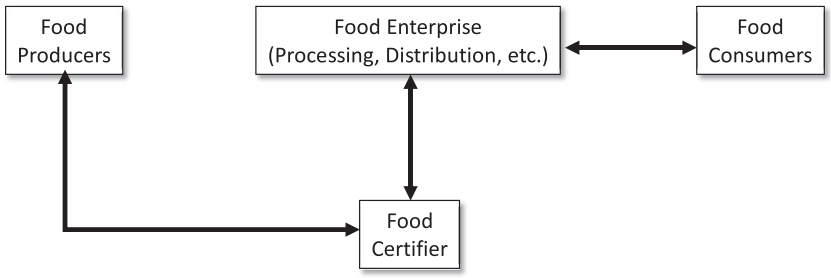

FIGURE 2 Relationships in the food supply chain that relies on certification

The corresponding sustainability principles are summarized in Table 4.

3.5 | International community-supported agriculture

This approach goes beyond establishing the previous relationships by also building direct relationships between food producers and food consumers (Figure 4), for example, through creating community-supported economy schemes or participatory governance structures (Rommel, 2019). Caring relationships also include knowledge transfer and capacity building, as consumers can learn about production methods and producers about consumer preferences and lifestyles. This approach calls for direct contact between all involved actors (including consumers).

The corresponding sustainability principles are summarized in Table 5.

TABLE 3 Sustainability-oriented design principles underpinning the approach "certification of international food products"

	Design principle	Description and sustainability justification	References
Certification of international food products	P6—Pay standard Fairtrade prices	Pay farmers or "fair traders" a price according to standards of the Fairtrade Labelling Organization (FLO), which is the minimum price plus a premium calculated by a standardized procedure based on a system-wide consultation process and considering the economic situation of the country and product category (FLO, 2019). Prices are usually higher than what farmers would receive on average without the certification and which are more stable against price volatilities. FLO principles also include non-monetary aspects, for example, ensuring no child and forced labor and investments in socio-economic community development. Fairtrade prices ensure stability against price volatility and provide producers and processers with more livelihood opportunities. In some cases, fair trade activities also contributed to an increased adaptation of ecological farming practices. If the Fairtrade price does not meet people's needs, the enterprise should adopt a standard that does.	Becchetti & Costantino, 2008; Dragusanu & Nunn, 2018

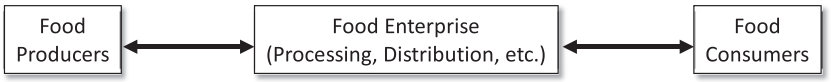

FIGURE 3 Relationships in the food supply chain that relies on direct international trade

4 | CASE STUDIES ILLUSTRATING THE ENTREPRENEURIAL SOLUTION APPROACHES

The following case studies illustrate the presented approaches. Most cases fulfill the majority of principles associated with the respective approach. For a clear distinction between approaches, we focus on one or more businesses practices of an enterprise instead of presenting a comprehensive description of the enterprise. Background information (location, founding year, etc.) for each case is compiled in Table 6.

The illustrative cases were selected on the basis of the following criteria: the cases are (a) related to international food supply, such as sourcing ingredients or selling food products internationally; (b) being driven by a pioneering entrepreneur (or team); (c) committed to and demonstrating sustainability practices, and (d) conducive to illustrate the respective entrepreneurial approach. For pragmatic reasons, our convenience sample of cases focuses on practices, products, or services of small-to-medium-sized food enterprises (<250 employees), mostly based in Germany. However, this does not mean that larger enterprises in other countries cannot adopt these approaches, as discussed in Section 5.

Data were collected through document reviews and semistructured interviews with representatives of the respective food enterprises (one per case), except for Grenada Chocolate Company (no interview). We analyzed the transcripts of the interviews with a directed content analysis approach building categories before and during data analysis (Hsieh & Shannon, 2005) using the software MaxQDA. The empirical data helped us to adjust and refine the entrepreneurial approaches derived from the literature.

4.1 | Illustrative cases for "reducing GHG emissions"

4.1.1 | Sailed and cycled coffee—Slokoffie and Grenada Chocolate Company

Slokoffie uses cargo sailboats and bicycles for transporting their food ingredients and products (Principle 1). In 2016, Slokoffie had purchased 20 t of green coffee from a farmer cooperative in Honduras, which was then transported via a cargo sailboat to Bremen, Germany. From the harbor, cargo bicycles delivered the green coffee to a warehouse. Over 3 years until today, Slokoffie sold green and roasted coffee of this carriage to small shops, directly to consumers, as well as to two regional bio-certified wholesalers. Slokoffie's mission includes promoting low-emission transport of high-quality food products. This includes deliveries to roasters by cargo bicycles. "We worked with 70 volunteers [...] to unload the ship, load the coffee to cargo bikes, and deliver it to the coffee shop" (personal communication, June 12, 2019). Consumers also support low-emission delivery practice. For example, in June 2019, two consumers transported 100 kg of coffee over 700 km from Bremen to Freiburg by bicycle, which was considered a climate action demonstration (personal communication, June 12, 2019). For the next year, Slokoffie currently explores new partnerships with coffee producers in Central America to continue the business.

A similar example comes from Grenada Chocolate Company with deliveries via sailboat from the Caribbean to Europe, using solar and wind power to cool the chocolate bars during the passage (Ceranic, Montiel, & Cook, 2013; Grenada Chocolate Company, 2019).

TABLE 4 Sustainability-oriented design principles underpinning the approach "direct international trade"

	Design principle	Description and sustainability justification	References
Direct international trade	P7—Add value in the country of origin	Shift value-added production steps from importing countries to the country of origin, for example, producing chocolate bars in local factories and exporting the bars instead of the cocoa beans. Adding value in the country of origin provides more livelihood opportunities for supply chain actors in need and contributes to the local economy. It also offers economic perspectives for the next generation, for example, engaging in technical processes and business administration, in addition to farming activities. Value-adding production steps in the country of origin should not systematically deplete natural resources, for example, through heating/cooling with non-renewable energy sources, and/or contribute to increasing GHG emissions beyond critical thresholds. The added value should be distributed equally across the value chain (intra-generational justice).	Ceranic et al., 2013
	P8—Shorten supply chain	Reduce number of intermediaries, for example, additional importers, exporters, or trade associations, especially those who do not add value to the product. This reduces costs, facilitates transparency, and allows for closer relationship building across the entire supply chain. Short supply chains offer more benefits to the real contributors, facilitates access to high-quality food, and could even allow all supply chain partners to participate in decision making. Money that is saved through reducing intermediaries should be distributed equally across the entire value chain (intra-generational justice).	Gómez-Luciano et al., 2018; Kalfagianni, 2019
	P9—Pay prices on the basis of socioeconomic needs	Pay every person working in the supply chain, including temporary field workers (e.g., coffee pickers), a price that recognizes contributions and socio-economic needs. This also requires helping to monetize the needs. Paying fair prices along the entire supply chain contributes to justice between individuals and countries. It allows for building sufficient livelihoods, instead of gradients from minimum to maximum gains. If farming is economically beneficial, the young generation is more likely to continue this line of work. Calculating prices based on needs accounts for changes and disturbances, for example, economic crises on the national level. A sustainable supply chain adapts prices to the new conditions. The socio-economic needs should be granted to *all* beneficiaries (e.g., farmers and coffee pickers) in an equal way (intra-generational justice).	Jaffee, 2007; Rommel, 2019
	P10—Support socioecological projects in the region of origin	Invest a ratio of profits in social and/or ecological projects in the region of origin or of consumption. Direct contact allows for making the impact of invested money tangible and transparent for all actors. This is an opportunity for an enterprise to "give back" to the community to which it belongs. In addition, ecological projects can contribute to social-ecological system integrity, intra-generational and inter-generational justice. Social-ecological projects should be based on broad stakeholder engagement and buy-in. Furthermore, they should be in compliance with a broad set of sustainability principles (vs. maximizing a single benefit).	Faltin, 2011

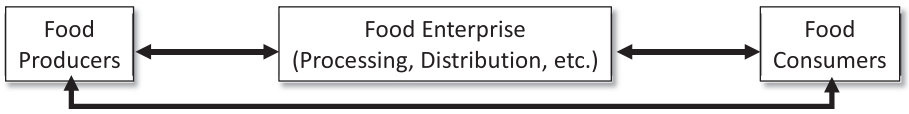

FIGURE 4 Relationships in the food supply chain that relies on international community-supported agriculture

TABLE 5 Sustainability-oriented design principles underpinning the approach "international community-supported agriculture"

	Design principle	Description and sustainability justification	References
International community-supported agriculture	P11—Create community-supported economy schemes	Co-finance agricultural production, that is, share benefits and risks among producers and consumers, through pre-financing the next year of production, instead of paying for the final product. Creating community-supported economy schemes contributes to a solidary relationship between consumers and producers. Sharing risks through up-front payments protect producers from price fluctuations. Negotiation among consumers ensures that everyone can participate, despite different financial means. Rights and responsibilities need to be negotiated with equal influence for everyone involved and be then equally shared so that trust is not being eroded.	Bloemmen, Bobulescu, Le, & Vitari, 2015; Rommel, 2019
	P12—Create participatory governance schemes	Take decisions collaboratively with involvement from all actors (including consumers). This includes decisions on the production, type, and quantity of goods to be produced and the purpose of reinvesting or distributing profits. Collaborative decision making facilitates trust building and agency in moving towards sustainable patterns of production and consumption, for example, healthy diets and environment-friendly agricultural practices. Decision-making processes should guarantee that everyone's voice is heard and accounted for and that no one is subject to discrimination.	Hvitsand, 2016; Rommel, 2019

4.1.2 | Growing cocoa and fruit trees—Original Beans

Original Beans is a chocolate company that offsets all GHG emissions caused by cocoa production and processing including transport (Principle 2). For each chocolate bar (70 g), Original Beans plants one cocoa tree in degraded areas of cocoa production countries, in particular, in the regions where they source cocoa beans from. They also offer GHG offsetting certificates to third parties, through old-growth forest protection in Ecuador and Peru. Original Beans' mission includes giving back to regions from where they received ingredients. On the package of the bar, the consumer can find a tracking code that provides access to information about the area where the cocoa is being sourced from (and the tree has been planted), highlighting socio-cultural aspects and ecological features (Principle 3). "We tell stories using drawings […], referring to an animal or a human […] to provide access to the place" (personal communication, June 5, 2019). In 2018, Original Beans protected 1.5 million trees on 17,000 ha, offsetting 8,055 t of CO_2. A footprint analysis shows that Original Beans' chocolate bars are "climate positive" (Original Beans, 2019). Planted trees include fruit trees for famers' personal use.

4.2 | Illustrative case for "reducing food miles"

4.2.1 | Sugar cane substitution and quinoa made in Germany—Bohlsener Mühle

In the past, the Bohlsener Mühle had sourced tons of sugar from international suppliers for their pastry products. In 2007, they started to replace sugar cane imported from Brazil with beet sugar from Germany, which reduced food miles (Principle 4). The Bohlsener Mühle also collaborates with local farmers on cultivating quinoa in northern Germany, a product that is mostly produced in and sourced from South America (Bolivia, Peru; Principle 5). The cultivation of quinoa is also a collaborative strategy to deal with changing climate conditions.

TABLE 6 Background information of illustrative cases

Name	Location	Year	Product(s)	Workforce	Countries of raw material	Countries of processing	Countries of consumption	Distribution channels	Product volume (2018)
Bohlsener Mühle	Bohlsen, Germany	1979	Quinoa	240	Germany	Germany	Germany	Retailer (supermarkets)	25 t
Fairafric	Munich, Germany	2015	Chocolate bars	7	Ghana	Ghana	Germany, Europe	Retailers (One-World shops, packaging-free stores, supermarkets), online shop	2.5 t
Grenada Chocolate Company	Grenada, West Indies	1999	Chocolate bars	NA	Grenada	Grenada	USA, Canada, Europe	Retailers, online shop	NA
Slokoffie	Bremen, Germany	2016	Coffee	5 (all volunteers)	Honduras	Germany	Germany	Online shop	6 t
Considerate Coffee Company & Catando Ando Coffee Roasters	Phoenix, AZ, USA, and Xalapa, Mexico	2017	Cold-brew coffee	2 and 7	Mexico	Mexico (roasting); USA (cold brewing)	USA	Wholesale to restaurants and hotels	0.3 t
Projektwerkstatt Teekampagne	Potsdam, Germany	1985	Tea	20	India	India (tea processing)	Germany	Online shop	420 t
Teikei Coffee	Hamburg, Germany	2016	Coffee	20 (2 paid +18 volunteers)	Mexico	Germany, Switzerland	Germany, Switzerland	Online shop , packaging-free stores, consumer communities	11 t
Original Beans	Amsterdam, Netherlands	2008	Chocolate	30	South America, Africa	Switzerland	Europe, worldwide	Online shop, retailer, chefs	300 t (raw cocoa)
Platanenblatt	Wangen im Allgäu, Germany	2012	Olive oil	3 (all volunteers)	Greece	Greece	Germany	Online shop, pick-up days	6 t (2017)

A farmer with limited access to irrigation works with the Bohlsener Mühle to grow quinoa, a stress-resistant plant that can deal with dry and wet periods. The annual volume of quinoa grown in northern Germany has increased from 2 t in 2015 to 25 t in 2018. The Bohlsener Mühle aims at compiling and revitalizing knowledge about rare grain varieties such as quinoa, chickpeas, or flax in Germany—all products usually imported from other continents (personal communication, August 30, 2018). The Bohlsener Mühle motivates and supports farmers to experiment with these varieties and ultimately develops new product lines that benefit both the enterprise and the farmers, while reducing food miles.

4.3 | Illustrative cases for "certification of international food products"

4.3.1 | Sourcing certified ingredients—Bohlsener Mühle and Fairafric

For smaller amounts of imported ingredients, for example, chocolate or dried raspberries, the Bohlsener Mühle purchases organic and fairtrade products from certified wholesalers (Principle 6) that guarantee certain standards are being met in the country of origin. "As a consumer, […] you are unwilling to pay for us to go there, monitor the conditions, and so on. We have to outsource this, so that it can be financed. We can only do this via certificates and supply chain management. [For companies], who source 20 tons of freeze-dried raspberries a year, it is worthwhile to go there. For the 100 kg we need […], they check for us what it is like there." (personal communication, August 30, 2018).

Another example is Fairafric, a company that sells chocolate bars produced and packaged in Ghana—from cultivating cocoa beans to processing the chocolate bars. They purchase additional ingredients such as sugar (from Mozambique) or milk powder (from Germany) as certified products instead of establishing relationships to the primary producers due to limited time and financial resources. "We cannot work as closely together [with sugar producers] as we do with the cocoa farmers. [But] we at least have the minimum standard there" (personal communication, March 8, 2019).

4.4 | Illustrative cases for "direct international trade"

4.4.1 | Strong commitments to small producers abroad—Projektwerkstatt Teekampagne

Projektwerkstatt Teekampagne in Germany focuses on black and green Assam and Darjeeling tea with most of the processing and packaging happening in the country of origin (Principle 7), that is, India. Teekampagne sells its products directly to the consumers, skipping cost-intensive wholesalers or storing companies that do not add value to the product (Principle 8). In addition, the short supply chain facilitates direct contact, trust building, and commitment to the producers. This results in Teekampagne's paying higher-than-market prices to the producers, allowing them to operate at a profit base and covering their needs and not merely covering their expenses (Principle 9). The tea producers create high-quality products, compared with other available products. Strong relationships also allow in times of crisis to find robust and fair solutions. For example, in 2014, a high anthraquinone contamination was found in the Teekampagne teas, which was resolved by changing the energy source for tea processing (personal communication, February 22, 2019). Already back in 1992, Teekampagne started a local social-ecological project in India (Principle 10), encompassing, for example, reforestation campaigns, nature clubs in schools, waste management, and beekeeping projects (personal communication, February 22, 2019). Teekampagne relies on word-of-mouth promotion rather than conventional marketing. Customers trust the enterprise and its direct relationships with the producers.

4.4.2 | Knowing and meeting the needs—Original Beans and Bohlsener Mühle

Original Beans works with so-called "Bean Teams" composed of about 10 people working in regions where cocoa beans are cultivated. They live in the communities with the farmers for some time, train them in agroforestry practices, and support switching to organic production. By living and working together, they get to know and build trust (personal communication, June 5, 2019). This is also possible because of the short supply chain (Principle 8). The Bean Team is also in charge of establishing an infrastructure in remote areas needed for cocoa bean supply. Original Beans pays significantly higher prices than the Fairtrade prices (Principle 9), which allows farmers, for example, to send not only their sons but also their daughters to school or to buy and cultivate a sufficient amount of land.

The Bohlsener Mühle offers a similar example within a regional context by negotiating risks and benefits with the farmers to determine truly fair prices (Principle 9): "We have developed a fair pricing model with our farmers, where we see that we can really pay fair prices, no matter what the market is currently like" (personal communication, August 30, 2018).

4.5 | Illustrative case for "international community-supported agriculture"

4.5.1 | Extended local community-supported agriculture—Platanenblatt

Platanenblatt distributes olive oil from Lesbos, Greece, to customers in Germany, adopting a community-supported agriculture scheme (Principle 11). Consumers pay for harvest shares upfront, irrespective of global market fluctuations and on the basis of the farmer's needs to cultivate the olive grove. Platanenblatt reinvests 10% of each share in social projects (Principle 10), for example, refugee support or schools. Each year, Platanenblatt, in collaboration with the olive farmer,

proposes projects for reinvestment to the consumer community, who democratically select one or more (Principle 12). In 2018, due to the warm winter, the harvest was very low. But there was still olive oil left from the previous year, yet of poorer (but still good) quality. Due to trust built over several years, the majority of the 600 Platanenblatt members agreed to receive last year's oil at the same or higher price to compensate for the loss in 2018 (personal communication, May 29, 2019). A couple from Germany with family in Lesbos is a key facilitator of this solidarity economy scheme. They regularly visit the farmer to help with the harvest. On so-called annual "pick-up days," before distributing the olive oil, the couple gives a talk about the past year at the olive grove and in the region and shares personal impressions and first-hand insights (personal communication, May 29, 2019). They also invite and host members to come to the olive grove and get to know the farmer and the olive grove (10 members have visited). These members then share their impressions during the next pick-up days, and so on.

4.6 | Illustrative cases for combining approaches

In the following, we present food enterprises that have adopted two or more of the entrepreneurial approaches described and illustrated above, addressing both large geographical and relational distances in international food supply.

Fairafric combines three approaches, namely, "reducing food miles," "direct international trade," and "international community-supported agriculture." Fairafric sources ingredients locally—not only cocoa, but also sugar, which is sourced from Mozambique instead of from India (Principle 5). Its product is chocolate, produced, processed, and packaged in Ghana, hence adding value in the country of origin (Principle 7). Fairafric keeps the supply chain short (Principle 8) and has deep relationships with the founder of the farmer cooperative and some producers as well as the workers in the chocolate factory. They openly communicate about problems (e.g., bio-certification) and collaborate on solutions. Fairafric pays to farmers the highest premium registered in Ghana and to employees in the chocolate factory a starting salary of $225 per month, plus benefits such as health insurance and pensions, compared with the minimum wage of $55 (Principle 9). In addition, Fairafric supports farmers in becoming shareholders of the enterprise (personal communication, March 8, 2019; Principle 12).

Teikei Coffee adopts three approaches, namely, "reducing GHG emissions," "direct international trade," and "international community-supported agriculture." Teikei Coffee collaborates with a cargo sail company bringing green coffee beans from Mexico to Europe, with final destinations in Germany and Switzerland (Principle 1), acting in solidarity with nature and people all over the world suffering from negative climate change effects. Through their marketing channels (websites, ship unloading, coffee shop, and local consumer communities), they inform about the region of production, the workforce, and how Teikei Coffee creates sustainable livelihoods (Principle 3). Teikei Coffee facilitates a short supply chain (Principle 8) among coffee producers and a processing companyin Mexico, a sailboat cargo shipping company, roasters in Germany and Switzerland, and consumers located in different cities in Germany and Switzerland. It uses a community-supported agriculture scheme, that is, consumers ideally pre-finance the next year of coffee production and receive a share of the harvest in exchange (Principle 11). Teikei Coffee facilitates relationships between all actors involved in the supply chain as well as between producers and consumers. Participants know and care about each other's needs. "I [as a consumer] can relate to the people who cultivate [the coffee] or who are part of the supply chain" (personal communication, February 28, 2019). Prices are negotiated to meet everyone's needs (Principle 9). Virtual communication and face-to-face meetings between the team in Europe and the team in Mexico helps building trust. Both teams respect and advance Teikei Coffee's mission and values. "We trust [our partners in Mexico]. […] They know our values and we trust that our collaboration is based on these values" (personal communication, February 28, 2019). Teikei Coffee also aims at educating consumer and other societal actors on sustainable and community-supported economies.

Considerate Coffee Company and Catando Ando Coffee Roasters adopt three approaches, namely, "reducing GHG emissions," "reducing food miles," and "direct international trade." Considerate Coffee Company is a cold-brew coffee company in Phoenix, Arizona that imports roasted coffee beans from Catando Ando Coffee Roasters in Mexico instead of buying coffee beans from Ethiopia (Principle 4). They initiated a bio-char initiative in Phoenix and invest in reforestation projects in Mexico, where coffee is produced, to offset GHG emission caused by transportation from Mexico to Arizona (Principle 2). Considerate Coffee Company has detailed insights and knowledge about the region and situation of coffee farmers, pickers, and their roasters, which they convey to their customers, whereas Catando Ando informs coffee producers and pickers in Mexico where their coffee is distributed to and who will consume it (Principle 3). They strive to develop a short supply chain (Principle 8), assuming the roles of importers and exporters in the future. On this base, Considerate Coffee Company and Catando Ando Coffee Roasters established a transparent and fair value chain that reflects the real needs of all people involved in the supply chain, including the coffee pickers (personal communication, February 27, 2019; Principle 9).

5 | DISCUSSION

Large geographical and relational distances in international food supply contribute to unsustainable development worldwide (Eakin et al., 2017; Princen, 1997, 2002). Different entrepreneurial solution approaches have been pioneered to address large distances and foster sustainability.

What do these approaches offer? Eakin et al. (2017) describe social, institutional, and physical distances in food systems and explore *governance* arrangements that address such distances and the sustainability issues associated with them. Similarly, there are government and nongovernmental organization (NGO) initiatives that address unsustainability in food systems globally (Ilieva, 2017;

Martínez-Torres & Rosset, 2010). We add an entrepreneurial perspective to these approaches, structuring approaches and presenting illustrative cases that solve "societal and environmental problems through the realization of a successful business" (Schaltegger & Wagner, 2011, p. 224). Entrepreneurial approaches seem to offer space for experimentation, especially in small-to-medium-sized enterprises with flexible and effective ("short") decision structures. However, enterprises have to adhere to rules, such as international trade arrangements. Thus, combination and alignment of different approaches (entrepreneurial, governmental, and NGOs) is needed to achieve transforming food systems towards sustainability. Also, *consumer-based* approaches gain momentum in contributing to these transformations. Kneafsey et al. (2008) and Albrecht and Smithers (2018) explore the benefits of reconnecting producers and consumers in local food systems. Our study adds additional empirical evidence to this conversation from an international perspective, with cases of enterprises that serve as "bridge-builders" by overcoming large relational distances.

What is the transformational potential of the presented approaches? Zerbe (2014) argues that *transformational approaches* need to be "oppositional" rather than "alternative." We argue for a complementary set of approaches that are transformational *in conjunction*. Actively creating relational proximity and overcoming individualism to re-embedding food production and consumption into broader social relationships (Zerbe, 2014) addresses problems more fundamentally than launching socioecological projects. Referring to the concept of leverage points for system change (Abson et al., 2017; Meadows, 1997), the presented approaches and cases tackle different leverage points, from shallow to deep. For example, the "reducing GHG emissions" approach focuses on parameters, that is, carbon stocks and flows, whereas the "international community-supported agriculture" approach tackles fundamental paradigms, that is, neoliberalism and exploitation, driving the problem. Food enterprises need to adopt and combine different approaches or, in other words, utilize the entire spectrum of leverage points—shallow ones for the early on-set and deep ones for the long-term success of transformation processes.

Under which circumstances can international food supply be considered sustainable, and what are acceptable trade-offs? Although close geographical and relational proximity seems to be a reasonably good *proxy* for sustainability, there are other relevant aspects to be considered when adopting a *comprehensive* sustainability perspective. First, there are more specific principles that are not captured the presented set because they are not directly linked to overcoming large distances. Such principles would address, for instance, production methods (monoculture vs. integrated farming systems), resource use, packaging waste, recycling rates, and more (Velten, Leventon, Jager, & Newig, 2015). Second, trade-offs are not sufficiently captured here. For example, overcoming large geographical distances by substituting international food products, for example, sugar cane, might deprive smallholders of their livelihood because they depend on export and import markets (Holt & Watson, 2008)—which seems problematic with respect to the history and present state of exploitation, power imbalances, and lack of responsibility (Clapp, 2015; Hendrickson et al., 2008). Although close proximity captures in a pragmatic way important facets of sustainability, it should be embedded in a comprehensive sustainability perspective on a case-by-case base to ensure that no critical aspect is overlooked. In summary, reducing large distances contributes to sustainable development *if* a comprehensive set of sustainability principles (see, e.g., Broman & Robèrt, 2017 or Gibson, 2006) is respected.

We presented a *convenience sample* of cases, which provide empirical support for the proposed framework. Yet, the sample is limited in geographical focus (most cases are from Germany and other central European countries) and size of enterprises (small-to-medium-sized enterprises). Also, a good share of enterprises uses volunteers and/or has only been established recently—thus, the economic viability, a key component of sustainability, is still to be demonstrated. Finally, some cases illustrate the respective approach well; others do so only to a certain extent. The proposed set of approaches and principles needs further empirical substantiation.

For (large-scale) sustainability transformation, that is, to increase the impact of sustainability initiatives, (bounded) scaling or amplification processes are necessary (Lam et al., 2019). Broadening the impact of the presented practices, for example, sailboat transportation, would need to go hand in hand with reduced consumption and sufficiency (Young & Tilley, 2006) as well as technological development, for example, cargo sailboats with higher volume and additional solar power for maneuvering or cooling systems. Businesses, which are based on trustful relationships among the actors involved, need to be scaled carefully and limited to a certain number of involved people in order to maintain high levels of trust (Ostrom, 2009). Transferring practices (solutions), rather than scaling them, might be a viable option, too (Forrest, Stein, & Wiek, 2019). Finally, policies and regulations that support sustainable practices and restrict unsustainable practices would need to be passed to further foster the food economy transformation towards sustainability.

6 | CONCLUSIONS

We presented a set entrepreneurial approaches and illustrative cases for addressing large geographical and relational distances in international food supply. The presented framework structures the approaches and cases according to two domains of distance (geographical and relational) and is specified by pragmatic sustainability principles to foster adoption. The study contributes to the concept and practice of sustainability entrepreneurship in the area of food systems. Future research ought to include broadening the spectrum of empirical cases to substantiate the framework and real-world applicability; investigating success factors and barriers for adoption to support enterprises in joining the sustainability transformation; assessing the transformative potential of approaches and cases to better coordinate efforts across enterprises; and exploring how to best combine entrepreneurial approaches with governmental and NGO efforts to transform food systems towards sustainability. Although entrepreneurial approaches to overcome large distances are one among other endeavors to foster sustainability in food systems worldwide, they

seem to have significant potential to foster change because of their openness for experimentation and scaling.

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