

Article

Trading in Discursive Commodities: Biofuel Brokers' Roles in Perpetuating the *Jatropha* Hype in Indonesia

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Abstract: Hypes about wonder crops raise critical questions about the actors and mechanisms that link optimistic narratives about the crops' potentials to actual production in the field. *Jatropha curcas* has been such a wonder crop, with a wide discrepancy between plans and reality. While many studies focus on agronomic or technological explanations of discrepancy and how to decrease it, much less is known about the influence of specific actors on creating a gap between high expectations and actual production in the field. This paper highlights the role of commercial brokers, who link potential investors and their capital to land and labor in the production areas. How have such commercial brokers contributed to perpetuating the optimism regarding the potentials of *Jatropha* plantations? The article presents the results of ethnographic research in a case study of commercial biofuel brokers at work in Sumba, one of the marginal areas in Indonesia targeted by policy makers for *Jatropha* cultivation. The study indicates that these actors have assembled their own short-term projects, translated narratives about future potential activities into the objects of trade in the present and produced optimistic figures about their projects to attract investors. In the conclusion, the paper warns against the unintended effects of green biofuel policies and discourses, when the latter get translated into a business opportunity for short-term private benefits instead of for the social and environmental goals for which the policies were originally intended.

Keywords: *Jatropha*; commercial brokers; Indonesia; biofuel policies; discursive commodities; land grabbing

1. Introduction

Half a decade ago, *Jatropha* was still praised as being “green gold” [1]—a promising source of renewable energy, which could be produced in an environmentally sustainable way. However, since 2010, there is increasing consensus that *Jatropha* projects worldwide have been a failure [2]. In Indonesia—one of the countries where *Jatropha* cultivation was targeted for millions of hectares—it is hard to find a commercial *Jatropha* plantation project that has successfully produced oil or biodiesel in the quantities that had been projected in the proposals. A recent overview of developments in the *Jatropha* sector concluded that for private plantations, “*Jatropha*’s long gestation period, unrealistic yield expectations combined with dropping fossil fuel prices, and the financial crisis have formed a lethal cocktail” [3] (p. 8). Some authors predict that improvement of seeds and technology could change the economic performance in the future [4] (p. 2186) and [5]; others argue that even under current conditions, there is a niche for *Jatropha*, but only in areas where specific agro-ecological characteristics coincide with low land and labor costs [3] (p. 56). Baker and Ebrahim [6] called for a “comprehensive analysis of recent events, trends and scientific evidence concerning *Jatropha*, because what is happening has all the signs of a mounting and monumental failure over 2012 and beyond”. The question is how to analyze this sector to be able not only to document and prove its failure, but also to explain how it could emerge worldwide and thrive for a decade. What have been the driving forces still perpetuating optimism, despite the many doubts about the sector’s potential raised since 2007 [7,8]?

This paper argues that dynamics between actors in the middle part of the global *Jatropha* production network [9,10]—between the international level, where demand is created and global discourses are framed, and the ground level of production in the field—have been important driving forces. These actors include investors, local government officials, NGOs, commercial brokers and landowners, who communicate and negotiate with each other about *Jatropha*-related activities. The few studies on intermediary actors in *Jatropha* projects reveal that multiple discourses of development linked to *Jatropha* created tensions between competing perspectives, manifested through allegations of exclusion and shady business [11] or leading to competition between scientists and politicians in their complex alliances for influencing national policies [12]. As Hunsberger [11] argued in her article on *Jatropha* projects in Kenya, where NGOs, donor organizations and farmers were involved, these multiple perspectives also allowed actors to deploy strategic flexibility by invoking *Jatropha* to pursue different ends. When this flexibility of deploying *Jatropha* projects is combined with the availability of donor organization funds or investment capital and supported by government policies, business opportunities emerge. How local actors with commercial objectives respond to the opportunities in relation to *Jatropha* has received little scholarly attention.

To address this gap, this paper uses an ethnography of development approach that studies “development in the field” as the end product of interactions between multiple actors, “which no economic model in a laboratory can predict, but whose modalities anthropology can describe and attempt to interpret” [13] (p. 28). Such research is not driven by normative questions, but rather aims at understanding concepts and practice of actors; it includes the “divergent and contradictory logics of practice” of actors [14] (p. 16), and how they react to the incentives that policy measures create. In line with that approach, the author’s research started by investigating activities related to *Jatropha* that were being implemented on Sumba Island after *Jatropha* promotion had become national policy. Sumba is

one of the marginal areas in Indonesia targeted by policy makers for *Jatropha* cultivation. Even though the *Jatropha* hype in Indonesia was already over in 2007, the new stimulating policies had only become effective beginning in that year. So while local government agencies and NGOs had stopped their *Jatropha* projects by 2007, at the same time a series of new commercial *Jatropha* initiatives was being established. Those initiatives are the focus of the case study of commercial biofuel brokers at work in Sumba as presented in this paper. The central question is: what has been the role of commercial biofuel brokers in Sumba in perpetuating the optimism regarding the potentials of *Jatropha* plantations?

A theoretical argument for studying brokers is that they are the actors who mediate between the “developmentalist configuration” (as a global industry) and the population in the areas where development is being planned [13] (p. 166). The term broker is used in this paper in general for companies or individuals who perform intermediary services, usually linking capital with knowledge, technology, land and labor. When development programs are not implemented through vertical state circuits, but instead are localized, there are increasing business opportunities for local brokers who master the skills for communication with international actors. They control the information and knowledge in their position between local and international actors. The introduction of *Jatropha* as a modern biofuel crop can be regarded as a development intervention, with the global *Jatropha* production network as a “developmentalist configuration”. In the early years of *Jatropha* promotion, international development organizations subsidized *Jatropha* projects, but after 2006, subsidies from national government budgets and commercial investments became important sources of capital for developing this sector in Indonesia [15]. Information about these sources of capital and how to access them is the knowledge asset that commercial brokers rely on when they design their projects and proposals to submit to local governments and land owners. In their communication with potential investors, information these brokers possess about access to land and labor and the availability of inputs is crucial. Actors who control information and knowledge have a pivotal position in the development of the *Jatropha* sector, because they can build an optimistic discourse by communicating, repeating and adopting positive messages, guarding information and challenging or suppressing dissenting information or views [16] (p. 11).

This article aims to contribute to the discussion about the actors who facilitated investment in *Jatropha* plantations, how they promoted their projects and how much land is involved. At an abstract level, the article contributes to “conceptualizing the relationship between [global and national] development policy models—an increasingly virtual world of sophisticated global ambitions—and the practices, events and material outcomes they are expected to generate” [14] (p. 9).

The article is organized as follows. Section 2 presents the national policy context in which the initiatives of commercial biofuel brokers emerged. Section 3 discusses the concept of broker and explains the methods used for researching the brokers in *Jatropha* projects. Section 4 presents the results of research concerning the ways commercial biofuel brokers have been composing their project plans and proposals to investors and provides insight into the discrepancy between plans and reality in the field. Section 5 provides an analysis of the case study in which commercial brokers’ activities are discussed as limited projects within the larger *Jatropha* commoditization process. The study indicates that these actors have assembled their own short-term projects, translated narratives about future potential activities into objects of trade in the present and produced optimistic figures about their projects to attract investors. In the conclusion, the paper warns against the unintended effects when policies and discourses in relation to green biofuels get translated into business opportunity for short-term

private benefits instead of for the social and environmental goals for which the policies were originally intended.

2. National Policies and Jatropha Projects in Sumba

In 2005, the Ministry of Agriculture encouraged farmers throughout the country to cultivate Jatropha as an energy (cash) crop in their own fields, providing them with the inputs and cash incentives. The agricultural service bought the first harvest at a price of IDR 5000 per kilogram, or even higher, to use as seeds for expanding the program. Many farmers joined the Ministry's program, and in Sumba some farmers started cultivating Jatropha after hearing the enthusiastic speeches of district government officials about the potential of the crop. Further, the national government promoted biofuel production with a Presidential Instruction on the supply and utilization of biofuel (1/2006), a Presidential Decree (5/2006) calling for a new "National Energy Mix" and a Presidential Decree (10/2006) establishing the "National Team for Biofuel Development to Accelerate Poverty and Unemployment Reduction" [12]. In 2006, the government was reported to have committed US\$ 1.1 billion in the 2007 national budget for biofuel infrastructure subsidies, in addition to subsidies for plantation improvement, training, and research and development [15] (p. 1). A year later, the National Team on Biofuel targeted areas for Jatropha production on a land suitability map, including a large part of Sumba. However, in the cultivation areas, prices had fallen to 500–1,000 IDR per kilo, because Jatropha seeds were no longer in demand as seed material, but only for processing into oil or biodiesel. The national government's fossil fuel subsidies worked as a price ceiling for Jatropha oil. Farmers were disappointed, and traders did not see profit in Jatropha: there was no market. By 2007, the Jatropha hype in Sumba was over. Surprisingly, soon after, private investors came to Sumba with business proposals for commercial Jatropha projects. One reason was that the policy context for establishing biofuel projects had become favorable by mid-2007.

Since 2001, when the national decentralization policy brought regional autonomy to the country's districts, district governments have been actively welcoming investors to their regions, hoping they would contribute to developing district economies and raise government tax income. The new Investment Law (25/2007) facilitated foreign investment and prolonged the period of legal access to land for agribusiness companies to maximally 95 years. In many resource-poor areas, such as Sumba, large areas of land are still unused, compared to other areas in Indonesia. These were depicted as available for exploitation and attracted the attention of investors wanting to invest in large-scale agricultural schemes. In that conducive policy context, some private enterprises and NGOs came up with new business plans for Jatropha schemes; proposals involved both full plantations or a business model in which a core plantation and out-grower cultivation were combined. These initiatives had in common that they relied on external investment capital for the startup phase of the plantations. However, the landscape in the areas where Jatropha schemes had been planned did not change much. There were only some initial plantation activities, such as making nurseries for producing seedlings, fencing the area where Jatropha would be cultivated and constructing some simple buildings for storing equipment. This phenomenon of only partial implementation of plantation plans, or even no implementation at all, was not new. McCarthy *et al.* [17] have situated the experiences with large Jatropha schemes in their historical context in Indonesia: many ambitious land use projects have led to

unplanned results in the field, and failed projects have been succeeded by new initiatives. This history of large-scale land use projects also indicates that where projects have failed in terms of their original long-term objectives, some of the actors who have been involved might have benefitted for a limited short-term period.

Seeking such benefits for a limited short period is a wide-spread phenomenon in Indonesia, referred to as “project hunting”. Aspinall [18] (p. 30) argues that “in virtually every social sector, it can appear that everyone—nongovernmental organization activists, local government bureaucrats, journalists, educators, religious leaders and others—is engaged in the endless task of *mencari proyek* (looking for projects) or at least being accused of doing so”. Aspinall argues that fragmentation is characteristic of political-economic organization in contemporary Indonesia, and that project hunting is a main driver of such fragmentation [18] (p. 27). Applying the notion of fragmentation to a national policy program in the economic sector—the promotion of *Jatropha*, in this case—points attention to the projects enabled by a combination of regulation and budget. In this case, the promotion of a new agricultural production sector can be regarded as a reservoir of project opportunities.

Figures about land acquisition for *Jatropha* in Indonesia vary widely. The Indonesian Government’s National Team for *Jatropha* Development reported approximately 150,000 hectares of *Jatropha* plantations in Indonesia as of June, 2008, and projected 1.5 million hectares for *Jatropha* cultivation in 2010 based on planned new plantation developments in provinces across Indonesia [15] (p. 26). In the same year the first world-wide *Jatropha* study reported 75,500 hectares of *Jatropha* plantations and assumed that Indonesia would be the largest *Jatropha* producer in Asia in 2015, with 5.2 million hectares [19]. A follow-up survey on *Jatropha* projects in 2011 reported 256,545 hectares established plantations in Indonesia, distributed over six projects [20] (p. 19). The survey data was provided by project initiators, CEOs and project managers [20] (p.12), who are the stakeholders and have an interest in inserting the most optimistic scenario’s into global narratives about *Jatropha*: on the ground it was very hard to find any cultivated *Jatropha*. Nielsen *et al.* [3] commented that the “only data [commercial *Jatropha* companies] tend to publish is highlights, *i.e.*, selected good results”. Data about realities in the field are hard to obtain and require in-depth knowledge and good access to local sources of information. The next part of the paper will focus on brokers who produce such data about commercial *Jatropha* projects in Indonesia.

3. Defining and Researching Brokers

Brokers cannot be defined in terms of who they are, but rather by defining what they do: they trade on gaps in the social structure [21] (p. 141). They connect “communities” that are involved in the production network of the commodity that the broker presents as his or her field of expertise [22]. Brokers can only provide their services as long as the information that is crucial for the good functioning of an economic sector is poorly distributed. For example, foreign investors do not know who to contact as key actors for obtaining access to land, and farmers and local government officials have no access to managers of investment funds. Additionally, information gaps exist not only in content but also because of language and jargon. Access to land in Indonesia, for example, requires knowledge of local customary land law and the national or even vernacular language. Brokers provide this information, and they also act as middlemen “connecting actors in systems of social, economic or

political relations in order to facilitate access to valued resources” [21]. Brokers provide crucial links between two otherwise unconnected communities, but because they are “in between two worlds”, they occupy ambivalent positions, both central and marginal to the communities and contexts within which they work [23] (p. 378). For example, a broker who is well connected with process technologists and is among the first to hear about new technology for producing biodiesel more efficiently or using *Jatropha* press cake for producing new commodities will use this information to attract the interest of investors. Translating information from one community—for example the process technology scientists—to the other—the investors, or local governments or farmers groups—they select and emphasize the information according to what they think is most important. A broker depends on the trust or complicity of others, “at just that point, the inter-communal boundary, where trust can be hardest to win” [24] (p. 60). On the one hand, the broker needs to be part of the communities he connects to be able to obtain high-quality information; on the other hand, he needs to translate the information of one community in a way that is recognizable and responding to the needs and questions of the other. In their study of development brokers, Lewis and Mosse [14] (p. 13) have used the concept “translation” (referring to Latour) in the specific meaning of “mutual enrollment and the interlocking of interests that produces project realities”. They stress that brokers engage in such translation to create coherent representations, creating context and tying in supporters, thereby sustaining interpretations. Composing business proposals is an example of translation, in which “heterogeneous entities—people, ideas, interests, events and objects (seeds, engineered structures, pumps, vehicles, computers, fax machines and databases)—are tied together into the material and conceptual order of a successful project” [25].

Apart from the neutral description above, the word broker also has both negative and positive connotations. An example of a positive connotation is the “knowledge broker” or “innovation broker”, as used by Klerkx *et al.* [26] (p. 53) in their Agricultural Innovation Systems approach to agricultural development and innovation. They explain that “knowledge brokering is about filtering relevant research, advocating the use of research in policy and practice, translating research into plain language and helping people to make sense of and apply information, and establishing a connection between research producers and research users”. Innovation brokers perform the functions of knowledge brokers, but they also act as “systemic facilitators”, resolving communication problems between groups and helping other actors in the innovation process “to get access to several other resources essential for innovation, such as capital, political support, business development services and material resources” [26] (p. 57). This definition of brokerage suggests that the brokers act transparently in accordance with their functions, without hidden agendas or out of personal interest.

In Indonesia, “broker” is often used as a vernacular term with a negative connotation, associated with private interests, corruption and cheating. Therefore people will not identify themselves as brokers but prefer using other terms for their profession. Brokerage is found everywhere in Indonesia. The country has the perfect circumstances for “connecting actors in systems of social, economic or political relations in order to facilitate access to valued resources” (Stovel’s characterization of brokerage mentioned above), because rules and regulations are often not clear or contradictory, and procedures to get access to resources are personalized in patron client networks [18,27]. This difference in perception between the Indonesian vernacular meaning of the role and functions of brokers and the

normative concept of innovation broker can lead to miscommunication between foreign investors and Indonesian business partners.

Research about commercial brokers in the biofuel sector is difficult, because of two reasons. First, brokers come in many shapes and are active at all levels of the production network, which makes it hard to identify them empirically. Second, they are not keen on providing information about their activities, except for what they present themselves at seminars, on websites and in proposals; being informal agents, they are not required to provide transparency. However, understanding brokerage requires attention to these actors as individuals, their micro-level relations and their motives, because the process is built from informal, personal relationships [21] (p. 140). The method for seeking access to commercial *Jatropha* brokers was snowballing. The first contact with brokers occurred when a short article about *Jatropha* in Sumba had attracted their attention, and a biofuel company director contacted the author as an expert on culture, land rights and local politics in Sumba [28]. After conducting a study for a renewable energy program in Sumba, some other brokers associated the author with access to investors, despite her transparency about being a university researcher without commercial interest. Collaboration with technical scientists in the interdisciplinary Dutch-Indonesian research program, Agriculture beyond Food, also gave me access to *Jatropha* entrepreneurs. Apart from gathering primary data through interviews and e-mail correspondence, the second method of research was a content analysis of business proposals, website information, texts and slides of seminar presentations, maps and legal documents (land use permits).

4. Biofuel Brokers' Contribution to the *Jatropha* Hype

Four cases of commercial brokerage in the *Jatropha* network between Indonesia and the Netherlands have provided detailed information to be able to understand how these brokers operate and what kind of influence they exert on developments in the *Jatropha* production network. The results pertain to three cases of commercial brokerage in Sumba and one on Java claiming to have a branch project in Sumba. A manager of a green investment fund who was considering investing in the project of the latter broker provided additional information about this case and gave insight into the considerations and ways of thinking of venture capital managers. The first part of the results indicates how these brokers have engaged in *Jatropha* projects and the shared characteristics that make them suitable for being a commercial *Jatropha* broker. Next is the part on the figures that these brokers have (re)produced, distinguishing data about: (1) the crop's performance and potentials; (2) the size of their project; and (3) on the investments involved. The names of the brokers and their companies have been replaced by A, B, C and D, because this article is meant to explore patterns rather than provide information on single cases that could be used for other purposes than increasing understanding about the roles of commercial brokers.

*4.1. Characterizing *Jatropha* Project Developers*

The brokers in this study portrayed themselves on their business cards, in their email signatures and on the Internet as "president director", "managing director" or "CEO" of a biofuel company, suggesting that their company was involved in actual biofuel production. They all lived for most of the time in the southern part of Jakarta, operating from their private homes. They had registered their companies, the

legal requirement to start a business, only recently. They had neither a track record in this industry nor experience in large-scale agriculture, but they did have specific expertise that is useful in establishing *Jatropha* projects. The first broker in my study was an Australian mechanical engineer with long experience in the 1980s and 1990s working for irrigation projects on the island of Timor. After he retired, he became interested in biodiesel production and in 2003 started a company for small-scale palm oil processing in Indonesia. He explained in an interview that he had turned to *Jatropha* after the increase in palm oil prices. Friends working for an NGO in Aceh after the tsunami suggested starting a project on pressing oil from *Jatropha*; they told him, “there is no fuel over here, and people used *jarak* (*Jatropha*) during the Japanese occupation in the 1940s”.

The second broker was an electrical engineer who had worked for a Californian company that built oil refineries. This led him to Indonesia, where he has lived since 1981. For a time, he operated a fleet of fishing boats, but in 2006, in the wake of a sudden price increase for diesel, he got interested in biofuel. He set up a company in Jakarta, with his Indonesian wife registered as the director.

The author learnt about the third case from a Dutch investor, who showed the author the business proposal that the company had made to him. The company had an address in Jakarta and a visiting address in Bandung, but it did not respond to efforts by the author to contact them.

The fourth is an entrepreneur whose company has been often mentioned in circuits of Dutch-Indonesian collaboration as the most promising *Jatropha* producer in Indonesia, for example, during the kick-off meeting of the research program, Agriculture Beyond Food in 2010. His *Jatropha* activities are concentrated in Central Java, and in a conversation in November, 2011, he said he also had a *Jatropha* project for field tests in Sumba; however, local informants in Sumba could not confirm that this test project existed. He has university degrees in greenhouse agriculture, science and innovation management, plant biochemistry and food microbiology. He specializes in translating global discourses to national and local levels (and *vice versa*) through presentations at seminars. All four brokers act as middlemen between potential investors and Indonesian institutions, who claim they can provide access to land: “traditional kings” and other village leaders, the district government, a private company holding a production forest concession, and the state forestry company. They are intercultural brokers between Indonesians and foreigners, emphasizing their dual identity, fluent in both Indonesian and English; but they do not speak the vernacular of the project area.

The stories of how all four ended up in Sumba are similar. They were connected to the relevant policy network for *Jatropha* in Eastern Indonesia; good contacts with high officials in the provincial government in Kupang, the capital of the province of which Sumba is part, or directly with the government of one of the four districts of Sumba, who advertised their territory as suitable for biofuel crop cultivation. They discussed their plans for *Jatropha* projects with key officials of the Ministry of Energy and Mineral Resources, in particular Assistant-Minister Dr. Evita Legowo, and the Board for the Application and Promotion of Technology (BPPT), both in Jakarta and Kupang. They collaborated with an institute of the Agricultural University in Bogor that fervently promoted *Jatropha* in 2006–2008, the Surfactant and Bioenergy Research Centre in Bogor (SBRC). Stimulated by the comments of influential actors in the energy policy circuit and the Presidential Decree (1/2006) on biofuel policy, brokers started looking for land, on the one hand, and capital investments, on the other, bridging the gap between the ambitious policy targets and the disappointing real situation.

4.2. Data on Crop Performance and Potentials

One of the main challenges for commercial brokers is to gather information and then present it in such a convincing way that the district government will issue a location permit and investors will start doing business. They present their information in business proposals, seminar presentations, through e-mails and social media on the Internet and, most of all, through face-to-face conversations. The materials accessed for this research either do not mention the sources of their information or use data from well-established research institutes that have, however, no direct link with the actual circumstances in the brokers' project areas. Table 1 provides an overview of key figures from written materials and interviews with the four brokers whose cases are included in this paper.

Table 1. Figures on *Jatropha* projects from four Indonesian broker companies.

Case	A	B	C	D
Source	Proposal 2010 interview 2011	Interview 2012	Proposal 2011	Seminar presentation 2011
Seed yield (ton/hectare)	8	n.a.	15	5
Oil content (% of seed weight)	43	30	30–40	38–42 (14 for oil, rest left in seed cake)
Price of seeds paid to farmers	n.a. (Uses 100% plantation model)	800–1000 IDR/kg	Unclear, deducted from repayment initial input credit	280 U.S. \$ per ha seed income for farmers
Selling price (U.S. \$/ton)				
a. <i>Jatropha</i> oil	a. 600	a. 600	a. calculated with current consumers	a. 800
b. press cake	b. 155	b. 150	prices for diesel	b. 80
c. waste	c. n.a.	c. 50	in Indonesia	c. 40
Employment (persons)	28,000 (in the sixth year)—38,000 (10th)	n.a.	7000, casual labor on daily base	180,000 families
Time horizon	10 years	n.a.	5 years	n.a.
Full production	10 years	n.a.	36 months	5 years

To assess the level of optimism these figures represent, we can compare them with scientific data gathered from real cultivation situations and not in test situations alone. However, up to 2013, a complete list of such figures is not available. Agronomists who are working on *Jatropha* productivity indicated in a seminar presentation in October 2012 that of the 12 genotypes of *Jatropha* they had been comparing in four different climatic zones of Indonesia, the highest real production had been 850 kg/hectare, with an average between 465 and 687 kg per hectare, depending on the climate zone [29]. The oil content of *Jatropha* seed is another key figure in calculations of future profit. Van Eijck *et al.* [30] (p. 141) compared the percentages provided by the literature on this subject and concluded there is a variation between 24 and 37 percent. That makes broker B's rule of thumb of 30 percent oil content well within the average. However, this is much higher than the 20 percent that informants in Sumba involved in the Ministry of Agriculture's *Jatropha* program estimated as real oil content in practice. The business proposals usually added that researchers are developing *Jatropha* varieties with higher oil content, even up to 60 percent, but none mentioned that these seeds are not yet available for production.

The brokers' data on prices in Sumba cannot be compared with other data, as there has not yet been any trade in *Jatropha* products. The brokers have good knowledge about the market for plant oil, and their estimations of the price of *Jatropha* oil are in line with that, considering that Brokers A and B mention prices in Sumba, whereas Broker D prices in Java. The figures for the selling prices of press cake and waste are estimations of prices in the future. Broker C's proposal did not include any data on revenue, but instead concentrated on costs in a five-year period, including detailed calculations of staff salaries. He anticipated that the state electricity company and the state oil company would be willing to buy the *Jatropha* oil, without any clarification or elaboration.

As regards labor requirements, the brokers seem to use a rule of thumb of two or three hectares per person, in response to the claim that *Jatropha* projects will create rural employment. However, none of them provides any information about whether these laborers will be recruited from the local population, nor whether laborers are actually available in the planned locations. In Sumba, the latter is unlikely, because the island is sparsely populated, and according to local rice farmers, there is already a seasonal shortage of land labor. Additionally, many people in Sumba are reluctant to work as plantation laborers and prioritize food and cash crop production on their own land [31]. Broker C only mentions "plasma farmers" (out growers) [32], but this is an unknown concept in the target area. In an interview, Broker A explained his plans about mechanization, which does not fit with the claim of creating employment for thousands of local people.

The time horizon and moment of full production are key figures for investors. Those data inform venture capital investors about when to set their "exit point," at which time they sell their share in the *Jatropha* project and move on to new innovative business opportunities [33]. Broker D's seminar presentation is interesting not only because of its figures and the subjects it raised, but also because of the techniques of performance applied while presenting. His communication strategy was: (1) mentioning the most urgent issues in the global debate about sustainable energy and bio-energy crop cultivation; (2) anticipating criticism; and (3) providing details, as quantitative as possible, about the solutions for these problems on which his company is working. The pace of the presentation was very fast, leaving the audience no time for digesting the information. It created an impression of technically sound business plans to tackle important global challenges. However, on careful study of the presentation, there was hardly any concrete information about real plans of operation.

4.3. Data on the Size of Land Acquisitions

All brokers in the four case studies claimed in communication with potential investors that they had already secured land and could provide them with access to thousands of hectares. However, interviews and documents indicated that there was a large difference between four categories of land access figures in these schemes: targeted land area, "secured" land, land with a legal permit for obtaining land access and, actually cultivated land.

In proposals and seminar presentations, the data concerning the targeted area reflected a potential of "available land" to be part of the project in the future, comparable to the National Biofuel Team's targeted area, as quoted above. Much smaller in size was the area that the brokers claimed to have "secured", referring to the memorandums of understanding (MoU) they have signed with local parties. However, such a MoU is neither a legal permit nor an agreement with land owners. Legal procedures involve a complicated sequence of permits and recommendations from various government institutions,

ranging from the National Investment Board to the district level government [34]. Eventually, the district government will provide a “location permit”, which allows the company to commence exploration of their business and negotiate with local land owners about the terms on which the company can make use of their land. Then, there is a fifth category of land access, which is not mentioned by the brokers: the area that has been released by land owners for use by the plantation. That is the only area to which a company can obtain legal access as part of the license allowing to establish and exploit a plantation. That land releasing process can be long and difficult, especially for marginal land”, because in Sumba, ownership of such land is communal, shared by the members of a clan, according to customary rules. Therefore, obtaining “secure” access to land requires a good understanding of the land law that pertains to the area targeted for project development; this means understanding procedures and authorities, at multiple levels of jurisdiction in plural legal systems [31,34,35]. The smallest area is that which is actually being cultivated with *Jatropha*. The data are compared in Table 2 below.

Table 2. Data on the size of *Jatropha* projects in Sumba, in hectares.

Case	A	B	C	D
Date or project Proposal (year)	2010	2012	2011	2011
Targeted area	300,000	7500	15,000	100,000–3,100,000
“Secured” area (=MoU)	80,000	7500	5000 (10,000 plasma farmers)	60,000
Area mentioned in location permit or concession	8000 (May, 2008; withdrawn October, 2011)	Concession withdrawn in 2012	0	n.a.
Actually cultivated (ha)	100 (at peak in 2009)	Nothing yet	Nothing yet	n.a.

Only Company A really had a legal permit from the district government to start negotiating with local land owners about the terms to get access to land. He offered landowners a compensation payment of one million IDR (US\$ 110) per hectare for a period of 35 years, but the landowners refused this offer. The potential investor in Case C interpreted the one-page land ownership document he had received from Broker C as a sufficient guarantee for access to land, because he did not have knowledge about legal land procedures in Indonesia. Broker B relied on another domestic company who had obtained a forest production concession 25 years ago and was now about to log the trees and replant with, among other crops, *Jatropha*. However, the Head of the Plantation Service in the district in Sumba explained in 2012 that the production forest concession had been withdrawn; the company would not receive a permit to log the trees. Finally, Broker D claimed to have a contract with the state-owned forest production company that would provide legal access to forestland under its authority; however, the broker never showed it to the potential investor, despite his repeated requests to see the document. None of these brokers actually owned the land for their *Jatropha* projects.

4.4. Data on the Investments

Since the financial crisis in 2007, there is renewed interest by institutional private sectors in expanding their investments in world agriculture [36]; this has led many scholars to express their concern about land grabbing [37]. The managers of this capital have been seeking target companies for

their investments, and the Jatropha project developers qualified theoretically as good candidates, because their proposals provided good stories. For example, Aston Lloyd in their promotion video on the Internet advertised their Jatropha projects as “new, sustainable, ethical, and profitable” [38]. The financial opportunities in relation to Jatropha have been created on a global scale, with centers of activity in Europe, the USA and Australia. The distance between the capital providers and the fields for cultivation and producing crude Jatropha oil is huge in terms of geography, language, social networks, legislation, interests and livelihoods. The general managers of green investment funds seek two types of partners who can bridge these gaps when they are considering investing in agricultural projects in developing countries: first, a “target company” to take care of actual production [33]; second, a variety of specialists, to act as advisors and informants for fund managers’ risk analyses. The brokers in this paper are partners who offer investment fund managers both of these services.

In Sumba, the brokers presented themselves as directors of agribusiness companies, but in daily conversations, the local population and government representatives call them “investors”. However, the companies run by brokers have only very limited capital of their own and rely on other people or institutions willing to invest in their projects. Indeed, they are rather secretive about their financial backing. Table 3 presents information obtained through interviews with the brokers and with the general manager of a private equity fund investing in Jatropha projects.

Table 3. Data on investment capital in Jatropha projects in Sumba.

Case	A	B	C
Date or project proposal (year)	2010	2012	2011
“Secured” land in ha in Sumba	80,000	7500	5000
Targeted investment capital	U.S. \$47,300,000	U.S. \$5,000,000	70,089,576.06 Euro (U.S. \$96,354,200)
Targeted investment per ha “secured” land (U.S. \$/ha)	579	667	19,271
Capital provider targeted by broker	Merill Lynch and Morgan Stanley (cancelled in 2009); 2011 American state subsidy plus private equity	Australian stock market in 2008; reversal in 2009 2012: private equity through LinkedIn	Private equity fund in the Netherlands
First or “up front” payment as proposed by broker	7,000,000 \$ US	n.a.	1,000,000 Euro

Broker A in this table claimed he already had agreements with the American investment bank, Merill Lynch, for financing his project. In 2008, according to Broker B, Broker A, had received an initial amount of capital for which he bought a lot of equipment from the USA. Due to the financial crisis in 2008–2009, Merill Lynch cancelled their agreement, and Broker A had to start looking for new investors. In 2011, he was trying to find matching private investment to enable him to apply for funding from the American Government’s Overseas Private Investment Corporation. At that time, he made the elaborate and optimistic business proposal, using the figures shown in the tables.

However, in October 2011, Broker A had not yet succeeded in finding capital, and there had not been any activity in the field since 2009. The district government in Sumba then decided to withdraw

his location permit; in accordance with a clause in the permit, within three years of the date of issuance the proposed project should have made clear progress.

Broker B had a bitter experience when his company was taken over by another company that promised funding through the Australian stock market. The initial public offering in 2009 raised 12 million Australian dollars. However, after three months, the partner cancelled their joint venture, leaving him with his part in shares that had become worthless. The only benefit in this short-lived joint venture was the 200,000 AUD working capital that he had received for his company. In an interview, Broker B explained the reasons for his partner company's behavior:

All they wanted was the money. They did not produce anything. The 12 million? They spent it on consultants' fees, which were all their friends, director's fees, everything... And the 20 cents shares are now worth 2.5 cents.

Despite this experience, he contributed to reviving optimistic narratives about *Jatropha* by participating in an online conversation on LinkedIn, "The *Jatropha* Project". This group discussion commenced with a person offering money and technology for a *Jatropha* project to anyone who could provide him with access to land. Broker B responded, offering land in Sumba. During an interview a few months later in Jakarta, he explained that the capital plus technology offer via LinkedIn had turned out to be false. The so-called investors asked him to transfer a deposit of U.S. \$800 through Western Union, a notorious means for Internet scammers to obtain money. Broker B's creative new way for accessing potential investors had not been successful.

The figures in Table 3 show the wide discrepancies between the total investment amount mentioned in the business proposals and what is proposed as upfront payment, or the first installment. However, receiving the first payment from the investors might have been the main objective of the brokers. When the total investment amount is very high and the upfront payment only 10 percent of that total, the amount that the broker would receive would still be very large, certainly by Indonesian standards. The business proposal of Broker C provokes the impression of rent seeking. His proposal was very weak and general, except for the budget, which was elaborate and detailed. Not just the total amount of targeted investment but also the ratio of investment per hectare "secured" land was much higher than in the other two proposals. Nearly 20 percent of Broker C's budget was allocated directly for salaries and wages, with an 11 person head office staff earning monthly salaries between 4000 and 2500 dollars, whereas land laborers would only receive a minimal three dollars per day. In 2011, when the Dutch investor with whom Broker C was negotiating made a few inquiries and informed him he had hired a lawyer in Jakarta, the broker quickly pulled out, arguing that their area in Sumba was not suitable for their *Jatropha* project after all, because of "interethnic conflict and violence, and locust infestation".

In summary, the *Jatropha* project developers in Sumba have not been successful in attracting capital for their proposed projects. "Not yet", they would say. However, their stories show that they have been able to engage in this sector over the last few years, which means it has provided them with sufficient means to survive. Their narratives also indicate that the line between providing services and presenting misleading information is blurred. However, in the world of biofuel brokers and private equity managers, there is little or no protection from such misleading practices. The brokers themselves are vulnerable to fraudulent colleagues, and small investors who put their money in funds that have not

been approved by their country's National Financial Authority for the Financial Markets know that, in the words of Broker B, "shares are like gambling. It is risk, risk capital. That's it, just like gambling".

5. Discussion

What can be learned from this case study of the *Jatropha* projects of commercial brokers? What has been their role in perpetuating the optimism regarding the potential of *Jatropha* plantations? Three answers emerge: these commercial brokers have been contributing to the perpetuation of the sector by assembling projects; they have translated elements of the discourse about the potential of the crop in the future into objects that can be traded in the present; and the figures they have produced have contributed to optimism about the potential of *Jatropha*. These three answers are elaborated below.

5.1. Assembling Projects

The initial activities in the cases discussed in this paper were not the experiments of farmers in the field, but discussions in the national capital Jakarta about opportunities created by policies promoting *Jatropha* as a biofuel crop. These government policies came in response to the hype about the crop. The brokers responded by making plans for *Jatropha*-related activities that fitted their expertise and networks. Although they presented themselves as directors of agribusiness companies, their main activities were not agriculture, but rather "project hunting" [18]. The previous section described their short-term focus, which did not include the period of full production in the future. Their proposals also did not include realistic data about production, which indicates that they did not expect to be held accountable for real output levels in the future. Their main activity was assembling projects. This included networking to create access to production factors, gathering information, writing business plans, arranging land use permits and producing seminar presentations. The aim was to attract investors who would provide the capital for their plans, including the salaries of the managing directors—roles these brokers planned for themselves. Two of the four went one step further than assembling the project, implementing some initial activities in the field—establishing a plant nursery and a demonstration plot, building a road and a warehouse and acquiring some machinery for land preparation. None of the projects reached full production, as had been projected in the proposals. Figure 1 summarizes the process of which the commercial brokers' activities were part.

Figure 1. The *Jatropha* commoditization process.



This figure shows the process of commoditization of *Jatropha* in which a variety of actors has been transforming *Jatropha* from a wild shrub into a modern global biofuel commodity as well as some valuable side products. The brokers discussed in this paper were most active in the second phase. In practice, the fourth phase has never been reached and, thus, reflects only commoditization in theory, or according to project proposals. From the brokers' perspectives, their *Jatropha* projects were activities

in a series of projects they had been engaged in, such as developing press machines, sea fishing or cultivating spices. They had no expertise in *Jatropha* production; they specialized in assembling projects and contributed to keeping the sector alive for a number of years. They actively fragmented the process of establishing a new agricultural sector in short-term projects. Such fragmentation, as Aspinall [18] argues, is characteristic of political economic organization in contemporary Indonesia and might well be added to the list of factors composing the “lethal cocktail” for the *Jatropha* sector [3] (p. 8).

5.2. Trading in Discursive Commodities

The second insight from studying the commercial brokers concerns a discursive technique for defining business opportunities. One of the main activities in assembling projects was translating the narratives about *Jatropha* potential in the future into concrete plans for the present. Broker D’s seminar presentation included many such translations. For example, he showed his targeted areas of degraded forest as a concrete example of (the projected) marginal land that would be available to *Jatropha* cultivation. Another example is that the brokers included the production of valuable by-products in their business proposals, addressing the concerns of critical investors who doubt the economic feasibility of *Jatropha* projects. However, those products have been invented only recently, and the technologies are not yet available for application in real situations, as the project proposals assume. “High oil content seeds” (see Table 1) is another example of inputs that will be used in the future, but which are not yet available for production. These tradable objects can be regarded as “discursive commodities”, a term that was coined by Fairhead *et al.* [39] (p. 241) in discussing how land grabbing for green purposes involved the discursive framing of nature in commodities that can be traded. Elaborating their concept, discursive commodities can be defined as objects of trade that have obtained market value because of the narratives that science, technology, politics and business have created about them, but do not yet exist in the real material world. For example, there would be no carbon-trading without the science-policy discourses that have discerned global warming and invented carbon-credits [39,40]. Discursive commodities are associated with future profit because of new market opportunities. That is why they attract the attention of venture capitalists, who specialize in identifying high-risk profit and short-term market opportunities for return on their capital, but are not necessarily interested in the material production that results from their investments. What we see happening is what Tsing [39] (p. 141) has termed “spectacular accumulation”, which occurs when investors speculate on a product that may or may not exist. In her study of the rise and fall of Bre-X gold mining company, Tsing argues that “investors are looking for the appearance of success. They cannot afford to find out if a product is solid; by then, their chances of profit will be gone.” The appearance of success is what creates opportunities for trading in discursive commodities. The sources of capital mentioned in the case study above are all venture capital funds, or investment companies that advertise the prospect of future profits in order to attract private equity from retail investors. In the latter case, the private equity firm sets a fundraising target for a given investment project and goes “on the road” to attract limited partner capital [33] (p. 704). In this way, new “green” markets multiply and enhance the financial value of nature and deal in or speculate on these new values [41]. Environments thus become business assets producing dependable incomes from the services they provide [39] (p. 244) and attract the interest of brokers, who mediate between green capital investors and local populations, who supply land and labor.

5.3. Figures and Virtual Land Grabbing

Assigning value to the discursive commodities is the third way by which the brokers in the case study have contributed to perpetuating optimism about the sector. They express their plans in quantitative terms, inserting figures about their future projects in their proposals. Table 2 shows the discrepancy between targeted and “secured” areas, the area with legal permits and the area actually planted. The business proposals only mention the size of targeted and “secured” areas, and these figures became part of the narratives about *Jatropha* projects that were reported in the media. These findings correspond with a discussion about large-scale land grabbing in Africa, in which Cotula [42] points out the difference in size between planned schemes as reported by the media, approved schemes as registered by national authorities, and implemented schemes as can be observed in the field. Between these three categories, Cotula concludes, the figures on implemented schemes are the smallest for two reasons [42] (p. 654). First, implementation usually begins on a small scale and is phased up to full capacity over relatively long periods of time. Second, many approved deals were implemented on a limited scale, usually due to greater-than-expected difficulties on the ground or to difficulties in financing. This distinction between data concerning the size of large schemes is important: inflated figures reported in the media contribute to creating hypes, whereas data about real field situations are required for understanding why, how and whether schemes have been implemented or not. McCarthy *et al.* [17] (p. 523) use the term “virtual land grabbing” for cases of large land acquisitions in which only a few initial stages of the land acquisition or enclosure processes occur, just sufficient to enable specific actors to pursue their own interests, which may or may not depend upon land use changes actually taking place. The initial phases of the land acquisition are part of assembling projects.

The fact that business proposals emphasize targeted and secured areas can be regarded as part of what Tsing has termed “the economy of appearances”, characterized by self-conscious making of a spectacle that is necessary for gathering investment funds [39] (p. 118). Included in such spectacle making is the social construction of scale [16] (p. 11). Following this line of thought, figures concerning *Jatropha* projects can be regarded as adapted to the narrative in which they are included. The global challenges of climate change and the energy crisis or national challenges, such as energy self-sufficiency and poverty alleviation, call for solutions of matching scale and size. Business proposals, framed as contributing to such solutions, should then refer to similar scales and include a project plan of matching size. The *Jatropha* proposal figures can be interpreted as part of the spectacle necessary to attract the means for implementing only a fraction of what has been planned. Moreover, not only business proposals but also figures on government subsidies for biofuel promotion in Indonesia show a similar pattern of discrepancy between figures on commitment and implementation. According to Dillon *et al.* [15] (pp. 1–2), the government “was reported to have committed U.S. \$1.1 billion”, but they add that it “is unlikely that all of these funds were disbursed” and estimate an implementation of around U.S. \$197 million.

6. Conclusions

Global and national support for *Jatropha* projects have created the opportunity for generating added value from the narratives around the variety of products that potentially can be produced from

Jatropha. Commercial brokers in production areas and venture capital investors have found shared interests in assembling Jatropha projects, and the consequences of their collaboration are many. First, the brokers have been composing stories and figures about their Jatropha projects that appeal to this type of capital provider, emphasizing, as well as or exaggerating, the growth potential and profitability of their projects in the future. Second, the managers of venture capital have been composing optimistic narratives about their funds in order to raise their own capital acquisition targets. That means that they, too, contribute to global narratives about miracle crops and the potential for biofuel production. Together, brokers and investors seem to act as multipliers of the optimism that is incorporated in the data that scientists have produced from laboratory situations. Simultaneously, they ignore the warnings of plant scientists that little is known about Jatropha and that many years are still required for developing improved varieties and better production and harvesting techniques. Third, venture capital investors have a short time horizon, typically five years or less, after which they withdraw from the project—the “exit point” in their investment strategy—by selling the project company or by an “initial public offering” on the stock market, selling company shares to the public [33] (pp. 705–706). Their interest is thus in obtaining high returns on investment as quickly as possible.

The case study presented in this paper demonstrates one way in which global discourses on green development, coupled with the consequence of the financial crisis that rendered land popular as a secure investment object, have been translated into very local projects, or dreams about potential projects. Brokers and investors together composed an economy of appearances necessary for gathering investment funds [43] (p. 118). Commercial Jatropha brokers in Indonesia have been engaged in this process, selecting and emphasizing information according to what they considered most conducive for achieving their objectives. They have been including data from many sources in their presentations and business proposals and integrated elements of global discourses on new green technologies—often presenting these as if they had already been successfully applied in reality.

What we can learn from this analysis of brokers in developing a new “green” biofuel sector is that policies for a “green economy” [44] or for the promotion of renewable energy can easily be sidetracked by actors who are not part of the project design. Brokers’ performances, in neo-liberal terms that foreign business partners might expect, serve to bridge knowledge gaps that have created market imperfections; but simultaneously, their performances are also dramatic performances in the economy of appearances [43] (p. 118), aimed at assembling projects. The result is that these actors, who are at the crucial interface between local resources and global capital and technology, limit their engagement in the development of new crops to making plans and business proposals, seeking investment and implementing some initial activities in the field. Their orientation is short term. They do not produce material products but trade in discursive commodities. Therefore, the recent history of private Jatropha projects in Indonesia warns against the unintended effects of green biofuel policies and discourses, when the latter get translated into business opportunities for private benefit instead of for the social and environmental goals for which the policies were originally intended. It is questionable whether the government can do anything against such sidetracking of green policy. The first step would be to acknowledge the role and influence of the type of commercial brokers discussed in this paper. Such a realistic approach would open the way towards searching for new means of preventing the sidetracking of policies and the embezzlement of shareholders’ capital and public funds that were meant for “green” purposes.

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Conflicts of Interest

The author declares no conflict of interest.

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