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Land Governance for Equitable and Sustainable Development

POLICY BRIEF **03**

The Global Jatropha Hype

Lessons from the boom and bust of a miracle crop

This policy brief presents some of the main findings and outcomes from an International Jatropha Conference, organized on 19 and 20 June 2014 in Utrecht, the Netherlands. Around 50 researchers, policy makers, private sector stakeholders and practitioners from civil society organizations gathered in Utrecht to discuss and compare research outcomes around jatropha projects. The conference was organized by Utrecht University-International Development Studies, LANDac, Van Vollenhoven Institute, HIVOS, BothENDS, Addis Ababa University and financially supported by the Netherlands Organization for Scientific Research.

Key points

- In the last decade many governments in the global south initiated projects to support jatropha cultivation, aiming to provide an alternative fuel while contributing to rural development in marginal areas.
- These projects were often funded by international donors, and were triggered by the expectation of rising oil prices, the unease with the dependency on energy supplies from unstable regions and the expected climate change caused by the burning of fossil fuels.
- Research shows that virtually all these projects have failed while the acquirement of large areas of land by jatropha entrepreneurs has bred conflict with local communities.
- 'Due diligence' was ignored.
- The hyped expectations about jatropha resulted in millions of dollars being invested, but without sufficient scientific backing of the claims regarding the production capacity of jatropha.
- Disappointment with jatropha projects can act as a disincentive for the much-needed investments in further research on the crop and its potential.

The Jatropha hype

Halfway the first decennium of this century, jatropha was internationally heralded as a wonder crop that would solve the problems of depleting fossil fuel reserves, climate change and rural poverty – all in one blow. Its nuts contain oil that is highly suitable for the production of biofuels, and could therefore become an important raw material for the bio-based economy, where biomass is used to produce fuel for energy and the production of plastics. Moreover, it was proclaimed that jatropha grows well on marginal lands as the plant requires little water or nutrients, and that the profitable use of degraded lands could help to lift farmers out of poverty. Jatropha projects received ample public and private support and funding. Worldwide, by 2008 about 900.000 hectares of land were planted with jatropha. It was projected that by 2015 this would have increased to some 13 million hectares.

Drivers of the hype

Jatropha was promoted by different actors and for different reasons.

- National governments promoted jatropha: 1) for budgetary reasons, 2) to reduce fossil fuel imports, 3) to fulfil international obligations regarding climate mitigation, 4) to develop marginal rural areas.
- Donor governments promoted jatropha: 1) for their own energy needs, 2) to reduce dependency on unstable fossil fuel exporting nations, 3) as part of development cooperation policies, 4) to mitigate climate change.
- Development organisations promoted jatropha: 1) to fight rural poverty, 2) to provide energy to rural areas.
- Investors promoted jatropha: 1) for profit reasons, 2) not to miss out on a promising business development, 3) to make use of available funding.

Jatropha curcas L. – a.k.a. physic nut or purging nut – is a shrub with a height ranging from 3 to 8 meters. The species can be found in tropical and sub-tropical regions in South America, Africa and Asia. Jatropha nuts contain 20-40% oil. Traditionally jatropha oil is used for manufacturing soap and for medicinal purposes (e.g. as a purgative). During World War II the Japanese grew jatropha in occupied Indonesia for the production of oil that was used as machinery lubricant and as fuel.

- The science community promoted jatropha: 1) to act as key factor in a promising, well funded development, 2) out of scientific interest.
- Farmers participated because: 1) jatropha was an additional cash crop and 2) they received subsidies for planting the crop.
- To the public at large, jatropha was presented as 1) an easy, technical fix for a complicated challenge, and 2) an escape from more painful policy choices regarding energy and climate change.

Experiences with jatropha

During the hype, several countries in the Global South have promoted jatropha production. In virtually all countries the results where disappointing, as shown by recent research presented during the conference in the Netherlands in 2014.

Indonesia
In 2006, the Indonesian Government launched a national campaign to propagate the cultivation of jatropha to address national concerns about growing fossil fuel expenditures. It was estimated that some ten million hectares of empty land were available for jatropha. Jatropha initiatives were usually short-term projects, based on available funding periods rather than on agronomic concerns. Many jatropha projects were associated with corruption. By 2006 the first reports came in about disappointing yields and low prices. Currently only few projects remain.[1]

Ethiopia
In Ethiopia the jatropha boom was reinforced by the government policy of giving out state-owned land for large-scale agricultural investment. Bio-fuel production was one of the sectors given priority. The Ethiopian government estimated that about one million hectares of land would be suitable for jatropha. The Ethiopian target for bio-fuel was 1.6 million tons annually. In reality, many jatropha projects that were started halfway the first decennium of this century, ceased – or transformed – their operation after a couple of years.[2]

Ghana
Between 2005 and 2010, several companies acquired over 180,000 hectares of land for jatropha production. Most projects were soon abandoned. The jatropha hype in Ghana occurred without suitable legislation. The Renewable Energy Act was only passed in Parliament when the boom was already over. The jatropha bubble in Ghana burst because of: conflicts over ownership and control over land; the lack of knowledge on jatropha agronomy; poor set-up of projects; the lack of a market for jatropha oil; the critique of international NGOs and local communities; and finally the relative stability of fossil fuel prices.[3]

India
In 2003, jatropha was selected by the government as a key crop to provide biofuel in view of the national blending target. Millions of farmers were encouraged to plant jatropha. In 2010, however, 85% of the farmers were reported to have discontinued production. One of the few projects still in existence is the Hassan Biofuel Park. This project focuses on small-scale production with jatropha shrubs planted as hedges, which therefore does not compete with land use for food crops. The Hassan approach requires little additional investments from the farmers and only little extra labour input. The jatropha hedges, however, do need water to bear fruit. Also jatropha appears to compete with other uses.[4]

Kenya
The arid conditions in Kenya created high hopes for jatropha. The production of bio-fuels fitted the agriculture-focused development plans of the Kenyan government. Development NGOs promoted the use of jatropha in a smallholder setting. The majority of the farmers, however, became highly disappointed with the yield and the market options for the seeds. Some jatropha projects are still operational, including an out-growers scheme that was set up by a Norwegian NGO. In this project jatropha is intercropped with other crops. The bio-fuel produced is offered to the farmers themselves or is used in the fish-cooling industry.[5]

Tanzania
In 2008, there were thirteen jatropha projects identified in

1 Presenters: Suraya Afiff and Jacqueline Vel, findings from the NWO-KNAW Jarak Programme (Agriculture beyond food), more information: http://jarak.iias.asia

2 Presenter: (Fekadu Adugna Tufa), findings from the NWO-CoCooN Programme Ethiopia & Ghana

3 Presenter: (Richmond Antwi-Bediako), findings from the NWO-CoCooN Programme Ethiopia & Ghana

4 Presenter: Evelien de Hoop, 'Findings from the Hassan Biodiesel Project in India', from NWO MVI programme 'Responsible Innovation'

5 Presenter: Dr. Froukje Krijtenburg, findings from the NWO-WOTRO research programme 'Development as a Trojan Horse?: Foreign Large-scale Land Acquisitions in Ethiopia, Kenya, Madagascar and Uganda'

Tanzania, mostly foreign funded. All the projects combined brought less than 5,000 hectares into cultivation. It was projected that this would expand into some 700,000 hectares by 2018. By 2012, however, many of the schemes had already ceased their operations. Prior to 2006, the Tanzanian government had no policies regarding bio-fuel production. Later a Biofuel Taskforce was set up and sustainability guidelines were developed. After 2011 new investments were halted.[6]

Mozambique
In 2004 the government issued a directive stipulating that each district should plant at least 5 hectares of jatropha. Jatropha projects were for a considerable part funded with Dutch money. Even after 2007, when the first negative reports came out, the hype continued. Afraid of losing initial investments, companies continued operations and researchers kept on focussing on jatropha, keeping it on the agenda. Jatropha projects were characterized by conflicts over land control. Companies often did not follow the regulations acquiring land. Local communities were often not aware of their rights, or lacked the bargaining power to strike a good deal. The few remaining jatropha projects focus on local energy needs in remote areas.[7]

Jatropha and land

The jatropha hype was partly based on the assumption of the abundant availability of underutilized lands. In reality, however, these 'empty lands' are often vital for the survival of local communities. The acquirement of large areas of degraded land by jatropha entrepreneurs has in many cases bred conflict. This was not helped by the fact that ownership of land in many countries is not a straightforward matter: land registers are neither up to date nor transparent, local communities are not aware of their rights to land, and consequently the process of Free, Prior and Informed Consent is often flawed. To make matters worse, the pressure caused by the hype-circumstances forced investors to make hasty and often non-transparent decisions, which fed the uncertainties and distrust regarding the benefits of the jatropha enterprises. In many countries the development of jatropha took place with contradicting, unclear or lacking government policies regarding land use, energy and sustainable development. The option of large-scale investments in jatropha plantations fitted the ill-defined modernization ideas of national governments. Research showed that large-scale, plantation based jatropha projects can cause the marginalization of local smallholders whose opportunities for employment in jatropha are limited and/or temporary.

6 Presenter: Dr. Janske van Eijck, based on NWO-MVI programme 'Responsible Innovation'

7 Presenter: Maja Slingerland, findings from different research projects

There is a conflict of interest between governments aiming to develop remote areas of the national territory, and commercial investors who have certain infrastructural requirements and prefer proximity to (sea) harbours and airports.

Pros en cons of jatropha development

Advocates and adversaries use a variety of arguments to plead for or against jatropha. These arguments are sometimes mirror images.

Pros
- When used as an alternative for fossil fuels, biofuel produced from jatropha can help to mitigate climate change.
- Domestic production of biofuel from jatropha helps decreasing dependency on fossil fuel exporting countries, and will decrease government spending on fuel imports and fossil fuel subsidies.
- Production of jatropha for biofuels can contribute to rural development, attracting investments, innovation, employment, etc.
- Jatropha can be used for the production of high quality oil (highly suited to be made into kerosene for jets).
- Being a toxic plant, jatropha does not compete directly with food production.
- Jatrapha can grow on poor soils, requiring little water or nutrients, and can potentially be used for the restoration of degraded areas.

Cons
- When forested areas or peat lands are cleared to establish jatropha plantations, this will increase greenhouse gas emissions.
- Large-scale investments in jatropha plantations may push smallholders who do not have clear tenure titles off their lands.
- Jatropha production may compete indirectly with food production in terms of land use, water, nutrients and labour.
- Jatropha production is labour intensive (due to non-synchronised fruiting and manual cracking of the hulls), and the plant's toxicity prevents alternative uses for farmers.
- Up to now, the yields of jatropha plantations have been disappointing, while prices have been low, which makes it an unattractive crop for farmers.
- Current varieties do need a lot of water and nutrients for higher yields.
- There is much competition for land, and 'empty' land is often not really empty.

Conclusion

Experiments in several countries have shown that jatropha has so far failed to become a main resource for a bio-based economy. The hyped expectations resulted in millions of

dollars being invested without scientific backing, while the principle of 'due diligence' was too often ignored. This led to disappointed farmers at best, and severe conflicts over lands and resources at worst. If there is a future for jatropha as a biofuel, new varieties must be developed with higher yields and synchronised fruiting, while governments should provide coherent energy-policies. In more general terms, the documented experience with jatropha confirms once more that top-down endeavours to promote rural development are likely to fail when local contexts and interests are not taken into account.

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More information about LANDac and our activities is available on our website: www.landgovernance.org.

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