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Opinion Article

India in the Oil Palm Era: Describing India's Dependence on Palm Oil, Recommendations for Sustainable Production, and Opportunities to Become an Influential Consumer

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Abstract

India is the largest consumer and importer of palm oil in the world. Its demand for palm oil is expected to double by 2030, which cannot be sustained just by increasing the import quantity, as it would be exporting its biodiversity issues to the supplying countries. We support the Government of India's views to expand oil palm cultivation in India. However, an aggressive push toward domestic oil palm cultivation at the expense of biodiversity is currently underway. Unsustainable expansion of oil palm cultivation in India with short-term economic goals will lead to both biodiversity and social issues. In this article, we outline India's position in the production and trade of palm oil. By reviewing the situation of Malaysia and Indonesia, we also propose necessary, workable solutions for sustainable oil palm cultivation in India. We recommend working within an integrative framework involving scientific research, social measures, and political actions: the 'SSP framework.' We believe that such an integrated approach is critical to achieve global sustainability targets from Paris Agreement at COP21 and 2015–2030 United Nation Sustainable Development Goals.

Keywords

biodiversity conservation, integrated approach, land-use management, policy framework, sustainable development goals

India Must Consider Sustainable Oil Palm Cultivation

Palm oil is currently the world's most consumed vegetable oil, with its main consumers being India, China, and European Union (EU) (United Nations Environment Programme, 2011). Besides food, palm oil is widely used in other commodities such as detergents, plastics, cosmetics, and biofuels (Basiron, 2007). Thus, profits from palm oil have attracted many industrial-scale palm oil producing companies, both regional and international (Carrere, 2013).

With a population of more than 1.3 billion (United Nations Department of Economic and Social Affairs, 2017), India is the largest consumer of vegetable oil in the world, with palm oil being by far the most used vegetable oil (USDA Foreign Agricultural Service, 2017). For the year 2016–2017, the total domestic consumption of palm oil by India was 9.3 million tonnes (MTn). In the same year, 98.97% (9 MTn) of India's palm oil was imported from Malaysia and Indonesia, indicating that only 1.027% was produced domestically. Moreover, Indonesia and Malaysia are the largest producers of palm oil, with 85% of global production. India also

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imports the largest quantity of palm oil, followed by the EU (6.7 MTn) and China (5 MTn) (USDA FAS, 2017). The EU and China use only 46% and 58% of their respective palm oil in food productions, and the rest are used in the cosmetics, oleochemical, and pharmaceutical products. However, in India, 94.1% of its palm oil is used in food products, especially as basic cooking oil (USDA FAS, 2017).

A crucial question that arises now is, with this increasing demand, can India continue to import palm oil from Indonesia and Malaysia—which contributes to the further destruction of biodiversity across Southeast Asian or tropical countries, or does India have other options to source sustainably produced palm oil?

In the year 2016–2017, with an average price of INR 520.00 per 10 kg (Economic Times Markets, 2017), India spent around 7.3 billion US dollars (INR 47,000 crores) to import palm oil. But, there is more at stake here than just economy. With an average yield of 3.85 tonnes of oil per hectare per year (Malaysian Palm Oil Council, 2012), 2.34 million hectares of land in Indonesia and Malaysia are required just to feed India's demand, which represents 21.1% of the land currently cropped with oil palm in Indonesia (Austin et al., 2017). If compared with Koh and Wilcove's (2008) estimates, at least 1 million hectares out of those 2.34 million hectares of oil palm plantation has come at the expense of old-growth rainforests. Increasing demand from India will put pressure on the palm oil producers to increase production, which can be done immediately by increasing the land under oil palm plantations, by means of deforestation. Increasing oil palm production through higher yields and productivity per unit land area already under cultivation does have potential and needs to be further investigated (Ibragimov & Sheng, 2019). The absence of regulations in India, for imports on palm oil produced through unsustainable practices, is likely to exacerbate further tropical deforestation outside Southeast Asia, especially in countries with low environmental regulations, already seen in parts of South America and Africa (Vijay, Pimm, Jenkins, & Smith, 2016). Thus, with an increase in palm oil imports, India will be exporting biodiversity issues such as land-use change toward industrialized agriculture, change in management of unprotected natural landscapes, and reduction in the possibility to create new protected areas—all of which without an evidence-based management plan (Sutherland, Pullin, Dolman, & Knight, 2004) will lead to species extinction and ecosystem collapse (Koh & Wilcove, 2008; Senior et al., 2013; Wilcove, Giam, Edwards, Fisher, & Koh, 2013).

With nearly 12.4% of Indian citizens living below the poverty line (Cruz, Foster, Quillin, & Schellekens, 2015), millions will be affected with even a slight increase in the cost of palm oil. In this context, adding a premium from sustainability labels for the imported palm oil, without subsidizing it for low-income citizens, is likely to be counterproductive. An alternative would be to expand its domestic production. India has been investing heavily in domestic oil palm expansion toward self-sufficiency in vegetable oils. Therefore, we support the Government of India's views to expand oil palm cultivation in India. However, it is important to follow environmentally sustainable practices in this expansion, with realistic goals and respecting and strengthening the laws that protect biodiversity in India.

Under special government programmes such as the Oil Palm Area Expansion (OPAE) between 2011 and 2014 and National Mission on Oilseeds and Oil Palm (NMOOP) since 2014, India has been aggressively pushing for increased domestic cultivation of oil palm (NMOOP, 2014). However, India is home to two global biodiversity hotspots (Myers, Mittermeier, Mittermeier, Da Fonseca, & Kent, 2000), and only 4.90% of its entire land is under protected area status (Ministry of Environment, Forest and Climate Change [MoEFCC], 2018). These sensitive areas, especially in the northeastern states are under increased threat from unguided oil palm expansion, due to the lack of robust studies on the feasibility of oil palm plantations and potential threats to the biodiversity and livelihoods of indigenous communities in this region. Moreover, substantial amounts of land in the northeastern states are community owned and managed. But, because of oil palm expansion, states such as Mizoram have instituted New Land Use Policies with a focus to replace traditional shifting cultivation with settled agriculture. This has resulted in social unrest with communities opposing the proposed New Land Use Policies in Manipur, stating that it is harmful for their ecologically sustainable traditional land-use management systems (Nagalimvoice, 2014). Similarly, conservation scientists working in Arunachal Pradesh have also cautioned against oil palm establishment in the state (Srinivasan, 2014, 2016; Velho, Datta, Datta-Roy, & Dollo, 2016), highlighting deficiencies in the government's oil palm policies, such as lack of sufficient dialogue with stakeholders, low transparency with the policies, biased experimental studies, and nonevidence-based actions (Nyori, 2016; Velho et al., 2016).

If done wrong without a view toward sustainability, the opposition to develop oil palm plantations in Manipur (Nagalimvoice, 2014) and Arunachal Pradesh (Srinivasan, 2016; Velho et al., 2016), which are not the ideal locations, will escalate. In such a situation, the government is likely to lose the trust of the locals and conservationists, depriving itself the opportunity to develop oil palm plantations in potential locations elsewhere in India.

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Recommendations to India Following the Proposed SSP Framework

India has brought nearly 54.7% of its total land under agricultural area, making it the country with highest net cropped area (Food and Agriculture Organization [FAO], 2018). With only 4.9% of the entire geographic area under protected area status (MoEFCC, 2018), it is not ecologically feasible to target these protected areas for further replacement with agriculture. Many threatened wildlife is also found outside these protected areas, in both government- and community-owned secondary forest, and grasslands. Nevertheless, these protected and unprotected primary and secondary natural areas provide local communities with essential ecosystems functions, such as regulation of climate and water, which are vital for their subsistence. With projected climate change, natural habitats will become even more critical to buffer against escalating water and food crisis in the near future (National Intelligence Council, 2009; Schellnhuber et al., 2013). It should be clear that it is impossible that India's vegetable oil problem will be solved just by converting these natural areas, without having undesired consequences to India's ecological and socioeconomic stability.

Unsustainable oil palm expansion with short-term economic goals will lead to both biodiversity and social issues in India (Mandal & Shankar Raman, 2016; Nagalimvoice, 2014; Srinivasan, 2014, 2016). We recommend tackling this issue using an integrative framework involving Scientific research, Social measures, and Political actions (SSP framework). We believe that such an integrated approach is critical to achieve global targets from Paris Agreement at COP21 and 2015–2030 United Nation Sustainable Development Goals.

Scientific Research

We recommend that all decisions taken by the government must be evidence based and scientifically driven (Sutherland et al., 2004). Before any further expansion of oil palm, we recommend two important actions:

Spatially explicit mapping. NMOOP is on a mission to bring an additional 120,000 hectares of land under oil palm cultivation (Government of India and Cabinet, 2017). However, we were unable to find a report that has mapped potential areas for oil palm and other land-use patterns. We suggest that explicit mapping is essential at the national level to understand land-use patterns, including protected areas, primary and secondary forests, agricultural land with crops, fallow lands, and degraded areas. Potential areas favorable to grow oil palm must be identified using climatic conditions, rainfall, water balance, and land profile (Budidarsono, Susanti, & Zoomers, 2013; FAO, 2017). Areas crucial for the survival of the biodiversity, such as protected areas, unprotected government- or community-owned primary and secondary forests, and traditional agricultural landscapes such as shifting agriculture, must be spared from future oil palm expansion. Similar measures are already directing a sustainable development of oil palm plantation in Ghana, where natural areas are being converted into plantations (National Geographic, 2018). However, in India, existing agricultural areas and nonarable fallow lands must be used to grow oil palm. Potential for such trade-offs must be explored at more regional or local level.

Oil palm is the most efficient oilseed, with nearly 5 times more production per unit area than any other leading oilseed crops (World Wide Fund, 2016). We suggest that plantations must be increased on existing agricultural lands by converting other oil seed crops, such as rapeseed, peanut and sunflower seed, and staple food crops such as rice, to oil palm plantations. With a profile of food production at the regional level, areas producing surplus amount of food crops could be allowed to be converted into oil palm plantations. This must be done while keeping the food security of the region in mind, along with projected population growth. Nonarable fallow lands could also be converted into plantations with adequate irrigation.

Replenishing the water table. With climate models forecasting a 0.5°C rise in temperature by 2030 in India, heatwaves, drought, severe storms, and flooding are expected to increase in the future, with negative effects on health and livelihoods. Flooding will increase in glacier-fed rivers followed by diminished water flows. In the regions that depend completely on the monsoon, the rate of precipitation will be increased over short periods of time, followed by long periods of drought (National Intelligence Council, 2009). Drizzle-type precipitation, important to replenish soil moisture (National Weather Service, 1996), is also expected to decline. This will cause alternating floods and droughts, affecting agricultural and water security, with ramifications for social and political instability (Schellnhuber et al., 2013). Northern and Eastern India in particular have been revealed as hotspots for groundwater depletion over the last decade, owing to overextraction for crop irrigation and decrease in precipitation, respectively (Rodell, Famiglietti, Wiese, Reager, & Beaudoing, 2018).

Oil palm is extremely water intensive, requiring 280 to 350 L of water per plant per day (Carr, 2011). With rising temperatures, it will be difficult to rely on precipitation alone for agriculture. Measures should be taken to effectively harvest rainfall. The NMOOP (2014) operational guidelines include incentives for farmers to set up

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drip irrigation and bore wells and to construct ponds and purchase pump sets for irrigation. However, no measures of replenishing the ground water table are incentivized. Replenishment of ground water must be immediately undertaken to sustain irrigation.

Using technique like Managed Aquifer Recharge, it is possible to artificially facilitate the increase in ground water storage. This is a technique to intentionally recharge suitable aquifers for subsequent recovery. Methods such as injection wells or infiltration structures such as ponds, basins, galleries, and trenches are used to reduce water loss through evaporation. This technique has proved to be very efficient worldwide, especially in dry regions of Australia (Dillon, 2009; Khan, Mushtaq, Hanjra, & Schaeffer, 2008).

Social Measures

Aiding an informed decision. Many farmers and tribal communities in rural India are unaware about the negative effects of oil palm plantations. Decisions taken by the government based on short-term economic benefits might lead to social and environmental problems, such as loss of traditional rights of indigenous communities over land and other natural resources, illegal clearing of forest lands, forest fires, and exploitative use of fertilizers, as were witnessed in Indonesia and Malaysia (Budidarsono et al., 2013; Colchester et al., 2007; Cooke, Toh, & Vaz, 2011; Sheil et al., 2009). We, therefore, propose that a series of workshops be held in each village, involving all stakeholders—local community, village councils, the forest department, horticultural department and nongovernmental organizations (NGOs). Communities should discuss the proposed oil palm cultivation and make informed choices. Such meetings should discuss and address the difficulties of oil palm cultivation for small holders, including a lack of income during the gestation period of 4 to 5 years, market fluctuations, and production vulnerability to climate (Noor, Gassner, Terheggen, & Dobie, 2017). The decisions must be made from a debate arising between officials pushing for oil palm plantations, and agencies that currently warn against potential downsides, with recommendations arising from such debates.

We understand the underlying difficulties to take this approach. However, involvement of stakeholders and civil society, support from NGOs, and active consultation with the local communities were the main reasons for the success of one of the largest voluntary resettlement programs from within Bhadra Tiger Reserve—a protected area in Southern India (Karanth, 2007; Wildlife Conservation Society-India, 2018). Achieving an informed decision might be difficult, but it is crucial for the success of the oil palm cultivation project in India. This may help avert the mistakes of the oil palm industry in Indonesia and Malaysia.

Safeguarding traditional agricultural practices in ecologically sensitive zones. Areas of Northeast and Eastern India have traditional shifting cultivation practices known as jhum. Although some studies indicate that jhum may not be economically feasible, and might be wasteful for the community, since it represents subsistence farming using large areas (Bandy, Garrity, & Sanchez, 1993; Lianzela, 1997; Ranjan & Upadhyay, 1999), these cultivation landscapes are culturally and ecologically important (Borah, Evans, & Edwards, 2018). Many communities associate their cultural identity and way of life to the age-old practice of shifting cultivation (Ramakrishnan, 1992). Such practices also support and buffer communities during market fluctuations (Cramb et al., 2009). It has been shown that when compared with monoculture plantations, jhum—with a mosaic of forest patches at different stages of regeneration—is far better at maintaining biodiversity in larger landscapes. Moreover, these secondary forests are important habitats for endemic and endangered wildlife (Mandal & Shankar Raman, 2016). However, Indian government has been trying to convert jhum to intensive settled monoculture crops for the past six decades (Maithani, 2005; Malik, 2003).

Converting large expanses of community-owned shifting cultivation lands into monoculture oil palm plantations will destroy key habitats of conservation importance, along with cultural heritage. We suggest that these community-managed forest lands should not be completely converted to oil palm lands, as this may cause socioeconomic instability in the long run (Teegalapalli & Datta, 2016). Instead, these landscapes have to be prioritized as cultural landscapes and protected areas, empowering local communities in protection, management, and sustainable tourism (Mohan & Athreya, 2011).

Involving the Roundtable on Sustainable Palm Oil. Roundtable on Sustainable Palm Oil (RSPO) is an association of organizations from different sectors of the oil palm industry, established with an aim to create and implement a global standard for sustainable palm oil (Laurance et al., 2010). A study by Carlson et al. (2018) shows that certification by the RSPO lowered deforestation by 33% from a counterfactual of 9.8 to 6.6% per year between 2001 and 2015, in Indonesia. The study also shows that certification had minimum impact on fire reduction and calls for strict measures to halt peat and forest loss.

However, the RSPO (2018a) is nonexistent in the growing Indian oil palm industry, with only 49 members. Even though the RSPO has shortcomings in effectuating

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sustainable oil palm production by not implementing a blanket ban on deforestation or conversion of peatland and failing to regulate the actions of its members (e.g., Laurance et al., 2010), it provides a platform for NGOs, governments, and communities to hold oil palm companies accountable and bring constructive criticism to the table. In addition, RSPO's (2018a) newly adopted standards, which have been agreed by their members, aim at increasing ethical plantations, by halting deforestation and human rights violations. We propose that plantations of both large and small holders in India be certified at the very outset by the RSPO, and that the local conservation organizations dealing with the oil palm industry involve the RSPO in their action plans. One of the most important steps in this regard is for consumers, conservation scientists, civil society groups, and the international community to lobby the Government of India to formally recognize and endorse the RSPO certification schemes through appropriate policies.

Lessons from Indonesia and Malaysia have shown that it is often difficult for small holders to absorb sustainability certification due to lack of sufficient capital and technical expertise, amidst other difficulties such as cumbersome labor and fertilizer management, that is associated with oil palm plantations (Noor et al., 2017). In response to this, the RSPO Smallholder Support Fund was set up in 2013 and has funded 32 smallholder projects in 12 countries aiding nearly 26,000 individual smallholders till date (RSPO, 2018b). Harnessing the RSPO Smallholder Support Fund and implementing the RSPO's (2018b) newly drafted small holder standard, under the supervision of local NGOs, could therefore enable even the smallholders to access equitable certifications. The Government of India has a golden opportunity to be an example to the developing world in ensuring sustainable expansion of a crucial food and cash crop.

National initiatives. NGOs play an important role in counteracting the negative impacts of the palm oil industry, and in pressuring governments toward reform and better policy. In Indonesia, NGOs such as Sawit Watch and Wahana Lingkungan Hidup Indonesia have been actively involved in resolving conflicts between local stakeholders and large companies and ensuring access to natural resources, indigenous rights, and sustainable environmental governance. In Malaysia, Jaringan Orang Asal Se-Malaysia', a collective of 21 NGOs focusing on advocacy issues of indigenous communities, and Malaysian Palm Oil NGO Coalition, with various environmental NGOs, play an important role in environmental protection (RSPO, 2013). Government actions, such as the One-Map Initiative (Mulyani & Jepson, 2016), identification of sustainable oil palm producers and traders (Bahuet, 2017; Zoological Society of London, 2017), and the peatland restoration agency of Indonesia (Badan Restorasi Gambut, 2015), have been successful in regulating the oil palm industry better. In the context of the success of NGOs and government initiatives in Indonesia and Malaysia, we advocate similar initiatives in India.

Political Action

Policies to safeguard unique tribal land tenure. Communities involved in traditional agricultural practices have unique land tenure systems, especially in the community-owned tribal lands of East and Northeast India. In the case of Northeast India, even though large swathes of land are nominally administered by the territorial forest division, land is owned and managed at the village level, with the consultation of village councils. Each tribe has well-demarcated boundaries separating their lands from those of neighboring tribes. Within a tribe, each village has its own lands, well demarcated from lands of adjoining villages. We propose that a clear regulatory framework must be prepared regarding land usage for oil palm in such sensitive areas.

Local communities in Southeast Asia face problems with oil palm companies regarding land rights conflicts, arising from agreements made with false promises and lack of opportunities to take part in decision-making processes (Budidarsono et al., 2013; Colchester et al., 2007). Tribal leaders are bribed to convert their tribal lands into oil palm plantations, disrupting the socioeconomic system of the community (Curry & Koczberski, 2009). People are forced out of their land with no or little compensation (Colchester et al., 2011). This may lead the communities to lose communal identity, social bonds, and experience uncertainties arising from monoculture cropping, such as disease, pests, and an increasing reliance on chemicals (Carlson et al., 2012; Obidzinski, Andriani, Komarudin, & Andrianto, 2012). Therefore, a regulatory policy must be designed before the expansion of oil palm plantations in such traditional agriculture and community-owned lands of India to prevent suffering of the local communities in the future.

Policies to regulate the usage of agrochemicals. With the aggressive move to convert large expanses of land into monoculture oil palm plantations that demands high chemical usage, farmers will be forced to use mineral fertilizers and pesticides to maximize yields, like in Southeast Asia, where fertilizers account for 25% of total costs (Comte, Colin, Whalen, Grünberger, & Caliman, 2012; Goh, Härdter, & Fairhurst, 2003). Studies in Indonesia have shown that runoff and leaching of nutrients from fertilizers and pesticides, including herbicides and the discharge of other effluents, are factors with high potential to affect water quality

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(Lord & Clay, 2006). The increased usage of pesticides like endosulfan (a polychlorinated pesticide) for cashew plantations in the Indian state of Kerala proved to be disastrous for health (Embrandiri, Singh, Ibrahim, & Khan, 2012; Saiyed et al., 2003). Endosulfan's effects persist after nearly three decades in the form of birth defects. To prevent such disasters from recurring, strict policies must regulate the import and usage of insecticides, pesticides, and fertilizers. Such policy must include the quantities and chemicals approved by national and international institutions like the World Health Organization.

Strong import policies as leverage. Being the largest consumer with a high demand growth rate, India is an important consumer of palm oil in the global market, with a big say in the global trade like EU. Recently, with a 640 to 18 majority, members of the European Parliament (2017a; MEPs) voted in favor of ban on imports of unsustainable palm oil and its use in biofuel. The motion for a European Parliament (2017b) resolution was drafted with regard to various environmental protection agreements signed by EU such as Paris Agreement at COP21 and 2015–2030 United Nation Sustainable Development Goals.

We propose that India too should use this leverage to promote the trade of sustainable palm oil by implementing strong import regulations. This would encourage more ethical and sustainable plantations—plantations that are grown only in arable, fallow, or unused lands, without converting primary or regenerating secondary forests or peatland and without causing social and economic losses for residents. This could trigger a change in oil palm plantation practices in both domestic and foreign arenas. Such practices would be an example for a bottom-up control from the consumer side (India) to regulate and direct the future expansion of oil palm plantations in a sustainable direction.

Summary

In this era of global biodiversity conservation, India cannot sustain its future palm oil needs, just by increasing the import quantity, as it would be exporting its biodiversity issues to the supplying countries. Therefore, we do support the Government of India's efforts to expand its domestic oil palm cultivation, but this must be done through environmentally sustainable practices, governed by evidence-based research, and by respecting and strengthening the laws that protect biodiversity in India. However, India's recent actions, particularly in the Northeast India (Nagalimvoice, 2014; Srinivasan, 2014, 2016; Velho et al., 2016), one of the global biodiversity hotspots (Myers et al., 2000), show otherwise. Such continued harmful actions would escalate the opposition to oil palm plantations, whereby the government will lose the trust of the locals and conservationists, depriving itself the opportunity to develop oil palm plantations in potential locations elsewhere in India. We recommend tackling this issue using an integrative framework involving SSP framework. Under scientific research, we recommend an explicit mapping to identify suitable areas for oil palm production and artificially facilitating the increase of groundwater level. Under social measures, we recommend involving local communities in decision-making process, protection of community-managed forests, and involvement of Roundtable for Sustainable Palm Oil and local NGOs. Under political actions, we emphasize the importance of policies to safeguard unique land-tenure systems to regulate the usage of agrochemicals and to strongly regulate imports, which can be used as a leverage to protect biodiversity rich areas across tropics. SSP framework would enable India to achieve sustainable oil palm production, along with the protection of high conservation value areas and rights of local and indigenous communities.

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Author Contributions

H. S. S. C. S. led the writing of the manuscript. All authors contributed critically to the development of the initial idea, drafts, and gave final approval for publication.

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