

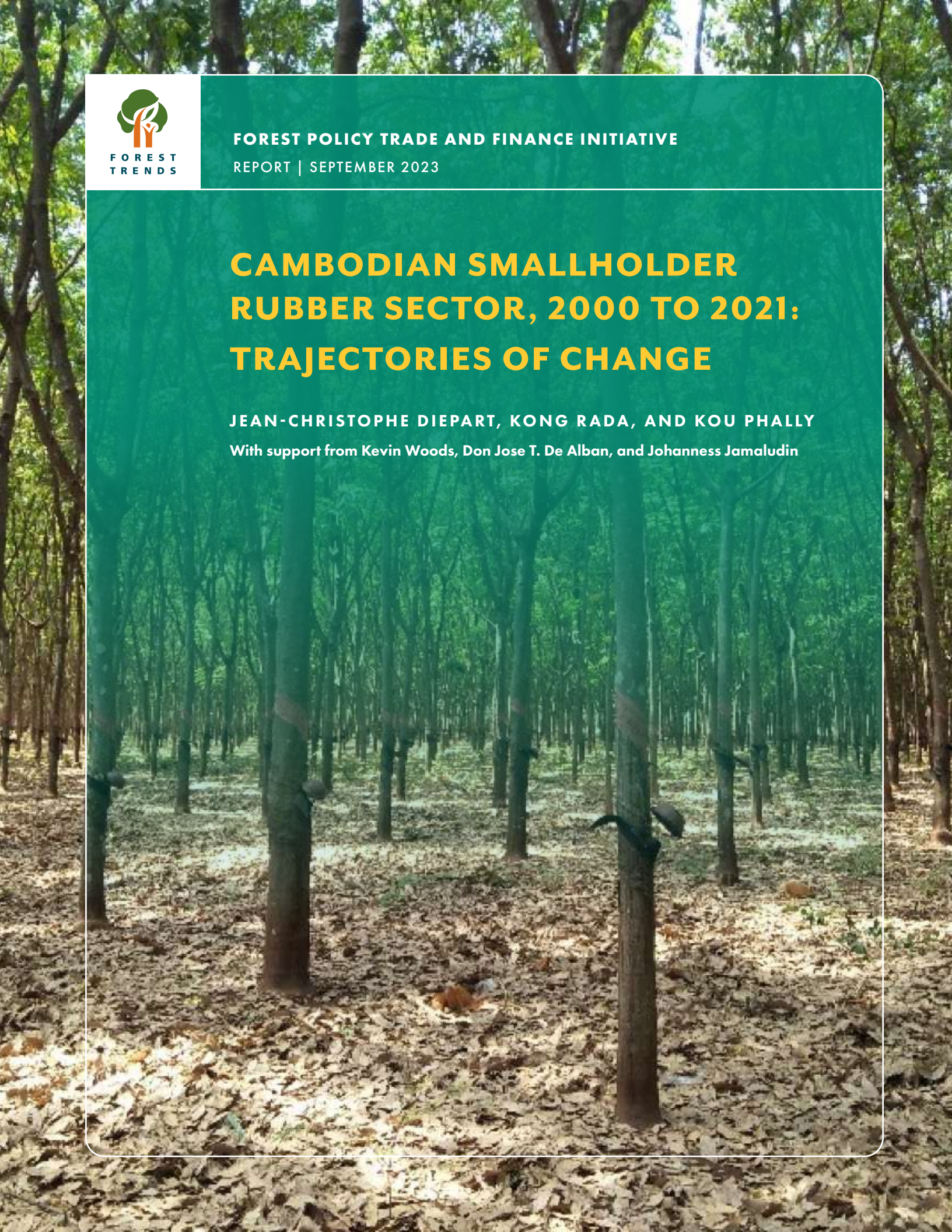


**FOREST POLICY TRADE AND FINANCE INITIATIVE**  
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# **CAMBODIAN SMALLHOLDER RUBBER SECTOR, 2000 TO 2021: TRAJECTORIES OF CHANGE**

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With support from Kevin Woods, Don Jose T. De Alban, and Johanness Jamaludin







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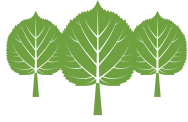
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## Acronyms

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<b>DRC</b>	Dry Rubber Content
<b>ELC</b>	Economic Land Concession
<b>FoB</b>	Free on Board
<b>GDR</b>	General Directorate of Rubber
<b>GVA</b>	Gross Value Added
<b>LULC</b>	Land Use Land Cover Change
<b>MAFF</b>	Ministry of Agriculture, Forestry and Fisheries
<b>NORAD</b>	Norwegian Agency for Development Cooperation
<b>ODC</b>	Open Development Cambodia
<b>PDAFF</b>	Provincial Department of Agriculture, Forestry and Fisheries
<b>RSS</b>	Ribbed Smoked Sheet
<b>SHR</b>	Smallholder Rubber Farmer
<b>SOE</b>	State Owned Enterprises
<b>SORE</b>	State-Owned Rubber Estates
<b>TSR</b>	Technically Specified Rubber



## Executive Summary

In Cambodia, rubber production plays a strategic role in the country's agricultural development, influencing land use, employment as well as the overall export-orientation of the country's agro-industry. While rubber production occurs on large-scale estates (Economic Land Concessions and privatized State-Owned Enterprises), the government has prioritized smallholder rubber production as a key contribution to the National Strategic Development Plan.

The sector remains dominated by large estates but smallholder rubber contribution is significant. According to official figures, as of 2020, 735,000 hectares (ha; 76percent) of the land area designated for rubber production had been granted as economic land concessions, 66,000 ha (7percent) as former state-owned enterprises (now privatized), and 161,000 ha (17percent) as smallholder rubber landholdings. By 2019, there were 32,100 smallholder rubber households cultivating a total area of 161,103 ha of rubber, 74percent of whom have a rubber landholding smaller than 4 ha. Smallholder rubber households are relatively more effective than large estates in turning land into actual rubber plantation. As of 2020, smallholder rubber landholdings represented 36percent of the total rubber area actually planted in the country.

The entire sector suffered a downturn after rubber prices peaked in 2011. Yet no study in Cambodia has examined how this downturn of the last decade has affected the dynamic of smallholder rubber as it relates to the land-use/land cover dynamics, smallholder livelihoods, and the value chain to which smallholders contribute. The report aims to fill this knowledge gap. It brings together the findings of a field-based research project conducted in 2020 and 2021 in three smallholder rubber hotspots in Cambodia (Kampong Cham/Tbong Khmum, Kratie, and Ratanak Kiri provinces).

We examine three interrelated topics. At the landscape level, we conducted a land cover and land-use change analysis to contextualize rubber in the overall dynamic of land systems of Cambodia over the past two decades and to understand the extent to which rubber price dynamic has acted as a driver of deforestation. At the smallholder farmer level, we examine how the rubber price drop influenced the socio-economic differentiation between smallholder rubber farming systems and impacted their income and livelihood. At the rubber value chain level, we looked at how rubber prices influenced the creation and distribution of value added along the different segments of the commodity chain (e.g., from production to export).

### LAND COVER CHANGE AND LAND-USE PATHWAYS AT LANDSCAPE LEVEL

While rubber is typically recognized as the key driver of land cover change and deforestation during the study period, our analysis shows a more complex picture.

We highlight intensive transformation in land systems over the period 2000–2020. More than half (56percent) of land in the area studied, totaling 31,071 ha, has undergone a change in cover at least once. Deforestation



and forest degradation account for 77percent of this land cover change area, including transition from forest cover to rubber accounting for only 17percent. A more significant area of new rubber comes from the replacement of old rubber plantations established before 2000 or from the conversion of other crops (e.g., cashew) to rubber. Rubber-driven deforestation has declined since 2013 and in areas outside Economic Land Concessions (ELCs), cashew has become a key “pioneer crop” (i.e., deforestation driver).

The transformation of land cover and land use related to rubber is caused by multiple interacting factors that operate at local, national, or global levels. The market price for rubber is an initial direct driver of land cover change, but it is by no means the only one. Its role and influence are mediated by several other variables that pertain to either the social or biophysical dimension of the land systems in these rubber landscapes, namely, the market dynamics of rubber and other crops; migration of smallholder farmers to upland areas; ELC implementation; land titling; soil quality; and the existence of a forest frontier. The relative importance of each of these variables changes over time.

The actual land-use changes on the ground are the contingent outcomes of interactions between multiple drivers. We identify three distinct pathways of land-use transition related to smallholder rubber in Cambodia: via the development of smallholder rubber in forest pioneering driven by migrants, in landscapes transformed by Economic Land Concessions, and in a shifting cultivation landscape.

## AGRARIAN TRANSFORMATIONS AT SMALLHOLDER FARMER LEVEL

This diversity of evolution at the household level is caused by multiple interacting factors that concern the timing of their installation — which has an important bearing on the size and type of land they can acquire — and their capacity to invest in rubber production.

The general category of “smallholder rubber farmer” erroneously conveys the idea of a homogenous group when compared with ELCs. But, in fact, this categorization hides a large diversity of livelihoods and ways of well-being. We captured a pattern of differentiation that allows for the identification of three main categories of smallholder rubber farmers based on the total size of their agricultural landholding: large landholdings (more than 10 ha), medium-sized landholdings (5–10 ha), and small landholdings (less than 5 ha). The rapidity with which this socio-economic differentiation process took place is striking. Primarily, it is due to the concomitant convergence of migration, rubber price, and titling. The differences between these groups are huge in terms of livelihood — ranging from households living in a lavish villa, with big cars and children studying at university in Phnom Penh, to families living in a small shelter struggling to make ends meet.

The measurement of rubber production economics is based on notions of “value added,” which indicates the wealth created during the production process. We computed and compared economic data between two market phases corresponding to two distinct price levels (“boom” prices of US\$2 per kilogram (kg) dry rubber content, or DRC, and “bust” price of US\$1.3/kg DRC.) The value added varied from US\$1,763–2,079 per ton DRC in the boom phase and from US\$1,159–1,374 per ton DRC in the bust phase, or a decline of 33–34percent between the boom and bust phases. The value added varies more between districts than between rubber landholdings in each district. This is because the yield profile heavily influences the total





value added. As far as farmer incomes are concerned, they varied between \$US745–1,267/ha/year in the boom phases and US\$420–756 ha/year during busts, or a decline by 39–43percent.

In terms of adaptation, a key observation is that the sale or the leasing-out of rubber land or the cessation of tapping is not an option for the vast majority of smallholder rubber farmers, simply because they cannot afford it. This logic greatly differs from the situation of large plantations that have often stopped their processing operations when the rubber price falls too low. This contrast reveals the strategic importance of smallholder households in supporting the sector. On the other hand, we observed that the different smallholder groups identified above adapt differently to the decline in the rubber price. Households with large landholdings tend to adopt long-term strategic mechanisms (e.g., expanding agricultural landholdings including for the production of rubber), while those with small landholdings rely on short-term responses, such as more off-farm wage labor, a reduction in maintenance costs, etc.

## RUBBER VALUE CHAIN DYNAMICS

Two main methods are used to convert latex into processed rubber before export: conversion into Ribbed Smoked Sheets (RSSs) and conversion into Technically Specified Rubber (TSR). RSS (which accounted for 92 units in 2016) and TSR processors (accounting for 37 units in 2016) will usually utilize latex produced on their own plantations. The purchase of additional latex or coagulum from smallholder rubber farmers is contingent on the purchase price, the distance between the smallholder plantation and the processing unit, the availability of transport for latex (usually organized by the processing unit), and the accessibility of technical equipment to produce TSR from coagulum.

However, the bulk of latex tapped daily in Cambodia, particularly with respect to smallholder rubber farmers, is not processed in RSS or TSR units but coagulated on-farm and sold to local collectors who take it directly to Vietnam. This is a central feature of the rubber value chain in Cambodia. In fact, the value chain is organized to encourage rubber farmers to proceed with on-farm coagulation of their production. First, a small price differential is actively maintained to put coagulum at an advantage over latex. This intervention in the market is managed through an opportunistic and strategic arrangement between influential traders on both sides of the border. Cambodian traders who export unprocessed rubber gain from the transaction as well as the growing Vietnamese rubber processing industry that triggers demand.

The decline in rubber prices on the international markets has had an immediate effect on the value added for producers, who have become more sensitive to small price differences. It has reinforced the advantage of coagulum over latex. The decline in rubber prices is concomitant with the large increase in rubber production that has resulted from the significant area of rubber planted in 2008–2013 becoming mature in 2014–2019. This gave a small inducement to exporters to maintain the price of coagulum at a higher level than that of latex, despite the overall decline in the rubber price.

However, this general pattern is not homogenous across the rubber landscapes of the country. The distance to the Vietnamese border is quite influential: the closer to the border, the higher the density of traders, and the higher the incentives for smallholder farmers to undertake on-farm coagulation, even if the distance between the smallholders' rubber plantation and the processing unit is within one-day reach. In contrast, in regions where there is a history of collaboration between processing industries and smallholder rubber



farmers (and thus greater trust), the premium price obtained if a high grade of rubber is produced can be transmitted to farmers, which incentivizes them to sell latex.

## LEGALITY AND WAYS FORWARD

The nuanced dynamics of the smallholder rubber sector are often poorly understood by downstream rubber industry stakeholders who, with the best of intentions, have committed to eliminating rubber linked to deforestation (or at the very least, illegal deforestation) from their supply chains. Our analysis shows that rubber's role has stopped being a primary driver of deforestation since 2013 in Cambodia. To be clear, deforestation has continued unabated, but it is now driven by other annual and perennial commodity crops, such as cassava and cashew. A nuanced and careful analysis linking rubber and deforestation is therefore much needed, particularly when implementing the Forest Overseas Rule of Law and Environmentally Sound Trade (FOREST) Act proposed in the United States (US), the Environment Act adopted in the United Kingdom (UK) in 2021, and the European Union's (EU) regulations on deforestation-free supply chains (EU 2023a) and on Corporate Sustainability Due Diligence Directive (EU 2023b).

The rubber sector faces other important legality issues. For one thing, the scope and production of rubber by smallholder rubber is largely underreported, as is the volume of coagulated latex informally exported across the border to Vietnam. From 2003 to 2022, this export of coagulum was at odds with the 2003 ban on the export of unprocessed rubber (RGC 2003). In 2022, after a realization that this ban was not realistic and practical for the rubber sector, the government repealed the export ban officially to give options to smallholder rubber farmers and allow them to increase their profit (RGC, 2022). This change in the legal framework notwithstanding, the export of unprocessed rubber implies that domestic processing units have a difficult time sourcing latex to run at full capacity. Here, again, the economic losses are substantial in terms of value added creation and job creation.

## RECOMMENDATIONS

These research findings, together with discussions held during the consultation workshop, allowed us to formulate several recommendations for different stakeholder groups with different time frame and level of complexity. Some key actionable next steps in the short term are:

### For government

#### General Directorate of Rubber

- Support the development of an efficient collection system for latex to incentivize the export of rubber in forms other than coagulum
- Monitor tree cover loss, deforestation, and forest degradation, with a focus on identifying both direct and indirect drivers (government and research-based organizations)

#### Ministry of Land Management and Ministry of Environment

- Grant titles for rubber areas that remain untitled after Order 01, while making the titling process simple and accessible for landholders with limited resources