

LAOS

Laos maintains some of the largest remaining intact forests in mainland Southeast Asia, which are home to diverse species. People are heavily dependent on forests for food, water, energy and income. Surrounded by more economically advanced neighbours, the country is susceptible to external investment in the land and energy sectors driving deforestation.

Drivers of deforestation

Smallholder farming 	Under contract farming schemes, large areas of forest are converted to annual crops (e.g. maize, cassava, sugarcane) and commercial perennial plantations (e.g. rubber, coffee, cacao, pepper) for regional and global markets ^[1] . Shifting cultivation practised by nearly 70% of Lao population drives forest degradation rather than deforestation ^[2] ; however, fallow lands are more prone to conversion ^[3,4] . When plantations are established on fallow lands, communities go further into forests to clear land for farming ^[5] .
Large-scale agriculture 	Rubber, sugarcane, biofuel and coffee are the major commodities in southern Laos ^[6] . Commercial agriculture is fragmented with average concession size under 500ha ^[7] , often in areas relatively accessible from the nearest district capital ^[8] . In some cases, the granting of concessions has been used as a mechanism to circumvent the timber logging ban ^[9] .
Tree plantations 	Both concessions and smallholder plantations of fast-growing trees such as eucalyptus and acacia have been promoted ^[10] , but contract farming is the main mechanism for establishing new plantations ^[11] . Approximately 0.5Mha of plantations have been established in Laos ^[6] . Legally, industrial tree plantations can be developed only on degraded or barren land, but in reality they are often established on forested land ^[12] .
Hydropower 	Several dam projects and power line construction have led to large-scale forest clearance. Displacement of communities by hydropower projects indirectly contributes to deforestation away from the project sites ^[11] .
Transport infrastructure 	Distance to main roads was one of the most important predictors of forest cover decrease between 2006 and 2012 ^[4] . Laos has the least developed rail, waterway and road network in the region. More investment in transportation infrastructure, including major projects such as East-West Corridors, will have impact on forest cover change ^[13] .
Mining operations 	Mining is the most significant subsector in terms of total projects and area under investment (21% and 50% respectively) ^[8] , though the forest area cleared for mining sites is much smaller than the concession area. Estimated 5,000ha-14,000ha deforestation by mining per year, with both large-scale and artisanal mining contributing ^[7] .
Logging 	Commercial logging as a driver may be declining in recent years due to stricter law enforcement ^[1,14] , but logging for household consumption has increased as rural population grows ^[2] . Despite stricter law enforcement, illegal logging remains widespread, often carried out by local villagers who may work as hired laborers for Vietnamese traders or by concession holders who clear forest beyond their premises ^[15] .
Fuelwood and charcoal 	Mostly for subsistence consumption but also for local and regional markets through vast web of informal networks ^[16] .

- Primary cause of forest loss and/or severe degradation
- Secondary cause of forest loss and/or severe degradation
- Less important cause of forest loss and/or severe degradation

Countries, region	Laos, Lower Mekong
Forest type	Humid tropical evergreen forests
Total area	3.6 Mha
Forest area in 2018	2.8Mha (79.1% of total deforestation front area)
Forest loss 2004-2017	0.1Mha (3.0% of forest area in 2000)
Location of deforestation	Central and southern Laos
Total forest core area in 2018	1.7Mha (59.8% of forests in 2018)
Fragmented forests 2000-2018	0.3Mha (8.7% of forest area in 2000)
Accumulated burned area, 2002-2019	0.5Mha (16.2% of forest area in 2000)
Deforestation trend	Increasing – upward trends till 2016, stabilization since then
Future trends	Deforestation rate gradually stabilizing, but remaining relatively high

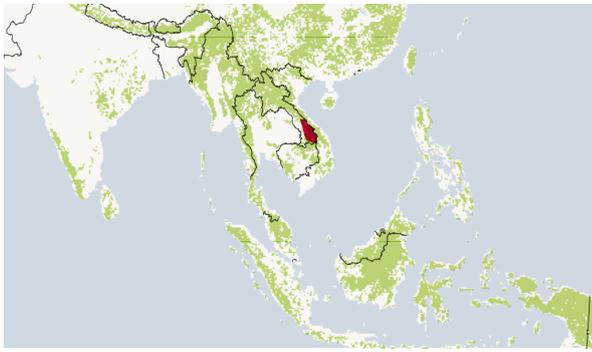
Responses

Protected areas	The 2007 Forest Law classifies two types of forest for protection – protection forests (for ecosystem services) and conservation forests (for nature and biodiversity) ^[19] . Laos has 24 national protected areas ^[20] but no complete inventory exists for provincial or district protected areas. IUCN-registered protected areas cover 3.86Mha (16.7% of land area) ^[21] .
Tenure rights	Customary tenure rights associated with shifting cultivation exist in most rural, mountainous areas. A land titling programme funded by donor agencies in the 1990s and 2000s sought to promote land rights by delineating village boundaries and developing village land management plans ^[6] .
Timber legality	Laos banned log exports in 2016 ^[14] and has made steady progress in negotiating EU FLEGT/VPA ^[22] . Stricter legality enforcement is overall positive, but there are also strong signs of leakage effects from Viet Nam ^[9] .
Land-use zoning	Numerous programmes actively support land-use planning, including a new initiative to in villages around Xe Sap protected area in the south of Laos ^[23] .
REDD+ projects	REDD+ projects in Laos are mostly small-scale, early stage pilots ^[24] .
Voluntary standards	Limited uptake of forest certification; however, a nationwide decade-long effort to promote the development of forest management plans at village level helps the first step of putting sustainable harvesting into practice
Rural livelihoods development	Numerous sustainable livelihoods projects/ programmes led by government, local civil society organizations and international NGOs.

- Deployment at wider scale
- Actively used and expanding
- Project-specific, experimental

Underlying causes

The proximity to Viet Nam and Thailand, major regional and global hubs for commodity processing, makes the country susceptible to external investment in the land and energy sectors driving deforestation. Poverty coupled with heavy reliance on natural resources for both livelihoods and national economy put strain of forests^[17]. Forest laws and policies are well designed, but lack of capacity and institutional inefficiencies at multiple levels hamper their implementation and enforcement^[18].

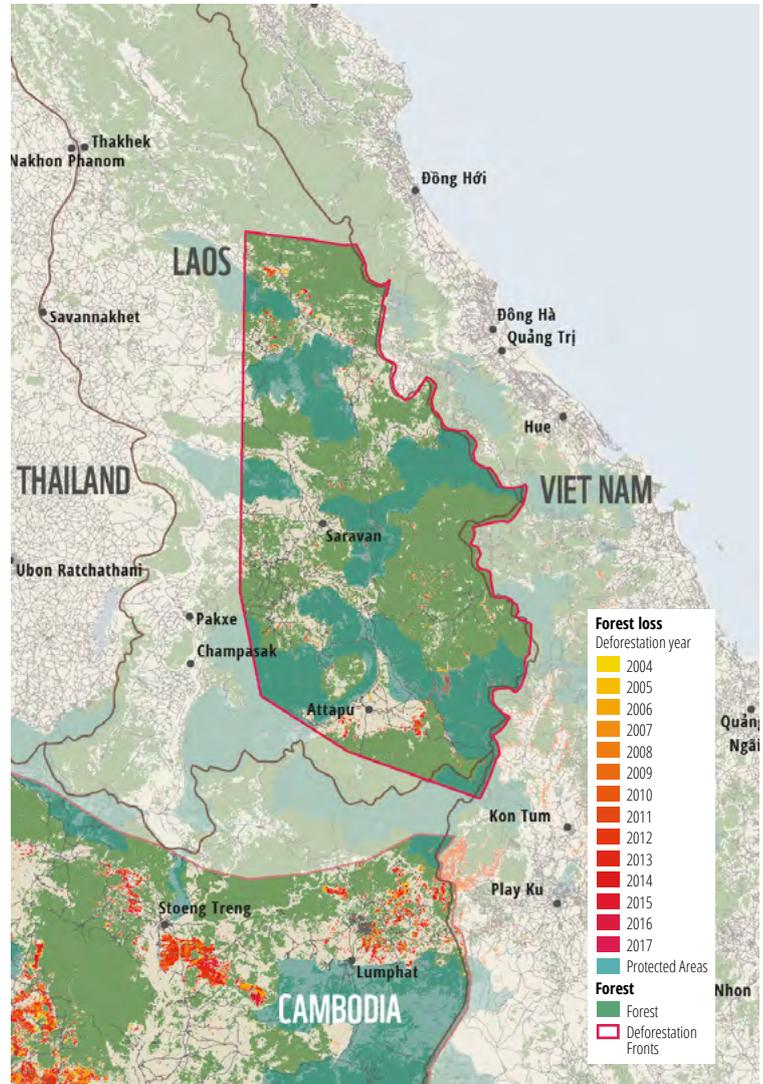


Main outcomes

Two out of Laos' three protected area categories have a negligible impact on deforestation, while the strictest protection category has reduced deforestation rates by 24 to 33%; however, many PAs are not in biodiversity priority areas^[25]. Formalization of customary tenure rights has the benefit of empowering rural communities, but has also led to loss of access to land by those practising shifting cultivation^[26], granting of large concessions to companies from neighbouring countries and escalating land conflicts^[27]. Strengthening timber legality may have short-term effects on reducing illegal logging and timber trade, curbing deforestation^[28]. Small-scale REDD+ projects have not been effective due to omission of high deforestation potential areas and inability to address main drivers^[29].

Recommended future actions

- Promote landscape-level land-use planning that includes mapping and strengthening of the management plan of high conservation value forests.
- Establish community-based economic development models in protected area buffer zones that include equitable benefit sharing from ecosystem services provision.
- Scale up improved plantation forest management and sustainable supply chains of timber and other forestry products (e.g. rubber), with the use of forest certification wherever feasible.



References

- Tuan, D.A. 2015. *USAID Lowering Emissions in Asia's Forests (USAID LEAF): Drivers of Forest Change in the Greater Mekong Subregion – Vietnam Country Report*. www.leafasia.org/sites/default/files/resources/Vietnam%20Final-RevISED-Nov2015.pdf
- Lestrelin, G., Trockenbrodt, M., Phanvilay, K., Thongmanivong, S., Vongvisouk T, Pham, T., and Castella, J.-C. 2013. *The context of REDD+ in the Lao People's Democratic Republic: Drivers, agents and institutions*. CIFOR, Bogor, Indonesia. www.cifor.org/publications/pdf_files/OccPapers/OP-92.pdf
- Baird, I. 2014. Degraded forest, degraded land and the development of industrial tree plantations in Laos. *Singapore Journal of Tropical Geography* 35: 328-344.
- Phompila, C., Lewis, M., Ostendorf, B., and Clarke, K. 2017. Forest cover changes in Lao tropical forests: Physical and socio-economic factors are the most important drivers. *Land* 6(2): 23.
- Meyfroidt, P., Vu, T.P., and Hoang, V.A. 2013. Trajectories of deforestation, coffee expansion and displacement of shifting cultivation in the Central Highlands of Vietnam. *Global Environmental Change* 23(5): 1187-1198.
- Hurni, K. and Fox, J. 2018. The expansion of tree-based boom crops in mainland Southeast Asia: 2001 to 2014. *Journal of Land Use Science* 13(1-2): 198-219.
- Thomas, I.L. 2015. *USAID Lowering Emissions in Asia's Forests (USAID LEAF): Drivers of Forest Change in the Greater Mekong Subregion – Lao PDR Country Report*. www.leafasia.org/sites/default/files/resources/Lao%20PDR%20Final-RevISED-Nov2015.pdf
- Schönweger, O., Heinemann, A., Epprecht, M., Lu, J., Thalongsengchanh, P., and Bernensia, G. 2012. *Concessions and leases in the Lao PDR: taking stock of land investments*. Center for Development and Environment (CDE) data. opendevlopmentmekong.net/library_record/concessions-and-leases-in-the-lao-pdr-taking-stock-of-land-investments
- Ingalls, M.L., Meyfroidt, P., To, P.X., Kenney-Lazar, M., and Epprecht, M. 2018. The transboundary displacement of deforestation under REDD+: Problematic intersections between the trade of forest-risk commodities and land grabbing in the Mekong region. *Global Environmental Change* 50: 255-267.
- Chanthath, X., Yong, L., Beckline, M., and Inthilath, S. 2017. Assessing the socioecological perspectives of eucalyptus cultivation and plantation expansion in Laos. *Open Access Library Journal* 4: 1-15.
- Ingalls, M.L., Diepart, J.-C., Trung, N., Hayward, D., Neil, T., Phomphakdy, C., ... Tagliarino, N. 2018. *State of Land in the Mekong Region*. Centre for Development and Environment, University of Bern, Switzerland and Mekong Region Land Governance, Vientiane, Lao PDR. doi.org/10.7892/boris.120285
- Forest Trends. 2011. *Baseline study 2, LAO PDR: Overview of Forest Governance, Markets and Trade for FLEGT Asia Regional Programme*. www.researchgate.net/publication/277714187_BASELINE_STUDY_2_LAO_PDR_Overview_of_Forest_Governance_Markets_and_Trade
- Open Development Mekong. 2019. Infrastructure. Available from: opendevlopmentmekong.net/topics/infrastructure
- To, P.X., Treanor, N.B., and Canby, K. 2017. *Impacts of the Laos Log and Sawmwood Export Bans: Significant Reductions in the Exports to Major Markets of Vietnam and China in 2016*. Forest Trends, Washington, DC, USA. www.forest-trends.org/wp-content/uploads/imported/Laos%20Export%20Ban%20Final.pdf
- Environmental Investigation Agency. 2011. *Crossroads: The Illicit Timber Trade Between Laos and Vietnam*. Environmental Investigation Agency, London. landportal.org/library/resources/mlrf1613/crossroads-illicit-timber-trade-between-laos-and-vietnam
- Barney, K. 2016. Sparking development or consuming the countryside? Lao charcoal commodity networks in the Mekong Region. *Asia Pacific Viewpoint* 57(2): 194-206.
- Boillat, S., Dao, H., Bottazzi, P., Sandoval, Y., Luna, A., Thongmanivong, S., ... Giraut, F. 2015. Integrating Forest Cover Change with Census Data: Drivers and Contexts from Bolivia and the Lao PDR. *Land* 4(1): 45-82.
- Gritten, D., Lewis, S.R., Breukink, G., Mo, K., Thuy, D.T.T., and Delattre, E. 2019. Assessing forest governance in the countries of the Greater Mekong subregion. *Forests* 10(1): 47.
- Forest Legality Initiative. Lao PDR.
- Ministry of Natural Resources and the Environment (MoNRE). 2016. *National Biodiversity Strategy and Action Plan for Lao PDR 2016-2025*. Vientiane, Lao PDR. www.cbd.int/doc/world/la/la-nbsap-v2-en.pdf
- IUCN. Protected Planet Database. Lao PDR.
- European Council. 2018. EU and Vietnam sign an agreement for better enforcement of forest law, governance and trade. www.consilium.europa.eu/en/press/press-releases/2018/10/19/eu-and-vietnam-sign-an-agreement-for-better-enforcement-of-forest-law-governance-and-trade
- WWF. 2016. CARBI project. greatermekong.panda.org/our_solutions/projects/carbi
- Dwyer, M.B. and Ingalls, M. 2015. *REDD+ at the crossroads Choices and tradeoffs for 2015–2020 in Laos*. Center for International Forestry Research (CIFOR) Bogor, Indonesia. www.cifor.org/publications/pdf_files/WPapers/WP179Dwyer.pdf
- Kukkonen, M.O. and Tammi, I. 2019. Systematic reassessment of Laos' protected area network. *Biological Conservation* 229: 142-151.
- FAO and MRLG. 2019. *Challenges and opportunities of recognizing and protecting customary tenure systems in the Lao People's Democratic Republic*. FAO and MRLG, Bangkok, Thailand. www.fao.org/3/CA1035EN/ca1035en.pdf
- Baird, I.G. 2019. Problems for the plantations: Challenges for large-scale land concessions in Laos and Cambodia. *Journal of Agrarian Change* 20(3): 387-407.
- Lewin, A., Mo, K., Scheyvens, H., and Gabai, S. 2019. Forest certification: More than a market-based tool. Experiences from the Asia Pacific region. *Sustainability* 11(9): 2600.
- Ramcilovic-Suominen, S. 2019. REDD+ as a tool for state territorialization: managing forests and people in Laos. *Journal of Political Ecology* 26.