

Silvopastoral systems for climate change mitigation and adaptation

S

ilvopastoral systems (SPS) are a type of agroforestry in which livestock graze on the edges or understories of forests or tree plantations, or trees and shrubs are grown within or alongside pastures. This approach provides shelter and

more diverse and nutritious fodder for the animals while allowing farmers to use resources more efficiently and generate more income from the land, combining livestock, timber and non-timber products.

SPS have multiple environmental benefits, especially when used to restore degraded pastureland or forests. The combination of trees, shrubs, legumes and grasses can help improve the soil and increase carbon storage and water absorption. Silvopastoral systems have also been found to boost biodiversity and make landscapes more resilient to drought and landslides.

SPS can take many forms and can be practiced at any scale: from clusters of trees and shrubs or “live fences” added to small pastures to provide shade and extra fodder, to large-scale, intensive SPS, which have been developed across Latin America, often backed by significant government investments and payment for environmental services (PES) schemes.

Many Southeast Asian farmers have applied SPS techniques for generations, though governments may not always recognise them as such. For example, in northern Thailand and northern Lao PDR, forest-dependent communities grow rice alongside other crops, such as cassava or taro, while rearing cattle in the surrounding forests. In Indonesia, farmers use *pekarangan* systems, a traditional, small-scale agroforestry method that combines annual crops, perennial crops, trees and livestock. In the Philippines, cattle are commonly raised in backyard farms,



A Cambodian farmer with cattle. The trees provide shade during the hottest part of the day. Photo: Flickr/Andrea Hale

typically tethered to trees and fed a mix of cut-and-carried grasses, fodder tree leaves, crop residues, and other available plants.

Given the rapid growth of the livestock sector in ASEAN countries, and the economic, climate and ecological benefits of SPS, promoting implementation of SPS approaches at all scales could be a valuable mitigation and adaptation strategy for the region. The potential for modern versions of SPS to improve the productivity and sustainability of farms and plantations in Southeast Asia is increasingly recognised as well. For example, a recent study in Peninsular Malaysia found that grazing cattle in oil palm plantations was an effective way to control undergrowth and increase income generation.

Understanding of the local context is crucial to social inclusion and gender equity in the promotion of SPS. In both the livestock and forestry sectors, women, for example, are often constrained by their limited access to extension services, credit, trainings and information. They also tend to lack decision-making power. Project implementers need to identify gaps and explicitly address them, so all members of the community can participate and benefit equally.

Insights for policy-makers, donors and project implementers

SPS provide an environmentally and economically beneficial option for farmers to diversify their incomes, restore and protect ecosystems, reduce emissions, and build resilience to climate change. While SPS models vary, the core principles are closely aligned with many traditional practices in Southeast Asia. Still, the uptake of SPS in the region has been limited to date.

Key challenges that need to be addressed to realise the potential of SPS in ASEAN countries include building farmers' knowledge of SPS through technical support, providing incentives for adoption, and assisting with access to finance, especially as returns on planting trees can take years to be realised.

Given that SPS have the potential to sequester a significant amount of carbon dioxide, SPS should be part of national climate change strategies and plans. Agricultural extension programmes should receive funding and training to support SPS implementation, through specialised units, and actively promote SPS. In some contexts, cultural barriers may have to be overcome. Farmers will need information and training to understand the increased labour and input needs associated with SPS and to learn how to adequately harvest and sell all farm products. They may also need access to supplies and machinery.

Financing institutions should be encouraged to offer finance that supports the addition of livestock to forestry systems, as this can generate yearly revenue from the outset – and, conversely, should provide finance for livestock producers to shift to SPS systems. Insurance schemes are also needed to reduce financial risks and encourage the implementation of SPS. Payments for ecosystem services (PES) and support in accessing programmes such as REDD+ can also help farmers adopt SPS.

Extension services can foster knowledge- and information-sharing among farmers to share their insights as they implement SPS in specific contexts. Across the region, ASEAN policy-makers should also promote knowledge-sharing and mutual learning about SPS implementation across countries, to support SPS upscaling at the national level.

*For a more comprehensive overview of SPS and its climate change adaptation and mitigation potential, as well as considerations for equity and inclusion, please consult the full version of this Insight Brief. This Insight Brief is part of a series prepared by the Stockholm Environment Institute on behalf of the Climate-Smart Land Use (CSLU) in ASEAN project. All briefs are available at <https://asean-crn.org/overview/publications/study-and-policy/>. This digest is written by Marion Davis based on Anschell, N., Salamanca, A., Nanda, E., and Davis, M. (2021) *Silvopastoral systems for climate change adaptation, mitigation and livelihoods*, ASEAN Climate-Smart Land Use Insight Brief 4. Jakarta: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).*

Published by Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH
Registered offices Bonn and Eschborn, Germany

Address Climate Smart Land Use (CSLU) in ASEAN
GIZ Office Indonesia
Menara BCA, 46th floor
Jl. M.H. Thamrin No. 1
Jakarta 10310 Indonesia
T +62 21 23587111
F +62 21 23587110
E hanna.reuter@giz.de
www.giz.de/en

As at September 2021

Photo credits Flickr/Andrea Hale
<https://www.flickr.com/photos/butterforfilm/6020944382/>

Authors Nicole Anschell
Albert Salamanca
Ella Nanda
Marion Davis

Editor Marion Davis

Design Jippy Rinaldi, Jakarta