

GUEST EDITORIAL

PLANTING NATIVE QUALITY TIMBER TREES IN SOUTH-EAST ASIA: PIPEDREAM OR LUCRATIVE BUSINESS?

L Kammesheidt

International Bureau of the Federal Ministry of Education and Research, c/o German Aerospace Agency, Bonn, Germany. E-mail: ludwig.kammesheidt@dlr.de

Some countries in South-East Asia such as Vietnam and the Philippines embark on ambitious programmes for greening degraded land by planting trees. As with reforestation schemes for the pulp and paper industry in Malaysia and Indonesia, these new forests are largely stocked with tree species exotic to the respective area, mainly *Acacia* spp. and *Eucalyptus* spp. Rationales for this preference are well-known. Easy storage of seeds and mass propagation, and higher survival rates of seedlings in open areas in comparison with many native quality timber trees, in South-East Asia above all dipterocarps, are rather uncontested points. Other arguments, for example, faster growth or higher resistance to pest and diseases of exotic trees compared with native quality timber trees do not bear up to critical examination in all cases. However, beyond these silvicultural aspects there are other issues in the debate on exotic vs. native tree species which deserve a closer look.

Fast dwindling natural forest resources is a general trend in South-East Asia except for tiny Brunei Darussalam. Also in other parts of the world little has been achieved in regard to biodiversity conservation since the ratification of the Convention on Biodiversity (CBD) in the 1990s. To raise awareness on the urgent matter to halt the loss of biodiversity, the United Nations have proclaimed the Decade of Biodiversity (2011–2020). In South-East Asia, protected areas cover 5–18% of the total land surface of the individual country. Figures at the higher end of this range are laudable achievements even on global scale. However, protected areas of larger contiguous size are often located at higher elevation (> 500 m above sea level) and hence are outside the natural range of the bulk of dipterocarps. Lowland dipterocarp forests are either converted into oil palm plantations or are heavily logged in permanent forest estates

such that it may take many decades to recover the commercial volume. The growing shortage of native quality timber is not only apparent in countries like the Philippines but also in other South-East Asian countries where plywood plants are closing down and furniture factories are increasingly importing quality timber from other parts of the world to meet their demand. Combining the safeguarding of at least part of the great diversity of dipterocarps (about 470 species in tropical and subtropical Asia) and other promising native quality timber species with a business by planting these species for high-grade uses looks timely and promising at first glimpse—but business has not started yet.

Since the beginnings in the late 1920s, management knowledge about reforestation schemes with dipterocarps in South-East Asia has been gathered mostly through small experimental plots either as enrichment plantings in logged-over stands or plantations on barren land (Weinland 1998). The Innoprise Face Project in Sabah, Malaysia is the only large-scale line planting scheme of dipterocarps targeting 25000 ha on degraded land. Although commenced in the early 1990s, surprisingly little is known about the fate of this enterprise which aims at carbon credits rather than sustainable timber production. Likewise, the documentation of the economics of dipterocarp plantations is scant. Kollert et al. (1994) studied the economics of dipterocarp plantations stocked with light hardwood species such as *Shorea leprosula*, with a rotation of 45–50 years and five thinning operations including the final felling. The returns on the capital invested range between 3.0 and 9.2% internal rate of return (IRR) depending on the scenario applied. The highest IRR is attained by excluding land value, investment cost and salary. An intermediate IRR of 6.3% is achieved if only the land value is excluded—probably the most

realistic alternative. In a 22-year-old enrichment planting with fast-growing dipterocarps, Ong (2005) calculated the net present value (NPV) of expected cash flows based on growth and yield estimates. A discount rate of 6% yields a positive NPV but any discount rate greater than this will result in a negative NPV. He concludes that enrichment plantings may not be an attractive investment for private commercial enterprises because they only consider discount rates of more than 10% as financially viable investments.

In contrast to monocultures, the non-profitability of enrichment plantings may be partly ascribed to the fact that commercial dipterocarps form only a fraction of the overall stand volume. Considering the decreasing supply of quality timber and changing wood processing technology, producing timber of lower dimension may be readily acceptable. Thus the economics of dipterocarp plantations should be revisited. Depending on site and management intensity, rotation cycles of 25–40 years with a target diameter of 30–50 cm seem to be feasible for some of the fastest growing dipterocarps. By that time, dipterocarps have already regenerated, constituting the next plantation generation. A two-phased final felling to provide shelter for the next crop rather than clear-cutting should be applied. We need more economic studies on the viability of dipterocarp plantations under different site and management scenarios to obtain a sound basis for decision-making. Yet, even with higher financial returns, the longer gestation period compared with, for example, *Acacia* plantations may hinder investment in quality timber production.

What kind of additional benefits should be offered and who should champion this sector? Some areas within oil palm concessions are located at higher elevations (300–600 m above sea level) where the productivity of the crop is lower anyway, and harvesting and maintenance costs are relatively high due to the unfavourable terrain. Here, on mostly degraded forest land that provide some initial shade, dipterocarp plantations would be an ideal option. Palm oil producers operating under the Roundtable on Sustainable Palm Oil (RSPO) certification scheme have to set aside areas of high-value conservation forest. By establishing dipterocarp plantations, concessionaires could both generate income and promote these activities as additional voluntary conservation of valuable natural

resources. Timber concessionaires will only opt for quality timber plantations if favourable framework conditions such as long-term land leases, subsidies or tax exemptions are in place. Also, technical advice and up-to-date information about proper management practices and the economics of dipterocarp plantations given by state forest services are crucial to support timber concessionaires potentially willing to venture into this business. Other potential benefits such as the integration of reforestation projects into the Clean Development Scheme (CDM), crediting carbon offset, seem to be unrealistic because only areas devoid of forests as of the end of 1989 are eligible for it (Kettle 2010).

There are more than 3000 tree species in South-East Asia and not only dipterocarps are commercially interesting. For example, *Peronema canescens* (sungkai), a relative of teak and light hardwood is suitable for producing fancy veneer, cabinets and carvings. *Peronema canescens* is easy to propagate and grows well even on degraded land. In Indonesia, the species has been planted on larger scale to protect reservoirs. However, data on growth and yield are widely missing. Preliminary results in three-year-old plantations suggest that *P. canescens* is growing as fast as *Acacia mangium* at similar age (L Kammesheidt, personal observation). Some other non-dipterocarps with commercial potential are described in Appanah and Weinland (1993). Also, a great deal of lesser-known timbers, i.e. 1550 species in 309 genera, are depicted in Sosef et al. (1998), though the bulk of these species have never been silviculturally tested.

It is a persisting myth for most tropical regions that monocultures with exotic trees will contribute to ease the pressure on remaining natural forests. Declining resources of quality timber outside protected areas are inevitably leading to clandestine logging in national parks and permanent forest estates. Planting native quality timber could counteract this trend. By doing so, it may not only meet current and future demand for quality timber for high-grade uses in the wood processing industry but also reconcile to some extent biodiversity and economic issues. The point whether planting native quality timber trees is a lucrative business for private investors or not depends on setting favourable framework conditions and having influential people at the forefront determined to promote this idea.

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Ludwig Kammesheidt, *Tropical Silviculturist, has 25-years experience as researcher, lecturer and advisor under various assignments in Latin America and South-East Asia. Currently he is a Senior Officer at the International Bureau of the Federal Ministry of Education and Research in Bonn, Germany, being in charge of science and technology cooperation with ASEAN countries.*