

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

INTERIM TECHNICAL GUIDANCE ON SALVAGE AND USE OF DOWNED COCONUTS AND TREES - TYPHOON HAIYAN/YOLANDA

Purpose

The Philippines Department of Environment and Natural Resources (DENR) (<http://www.denr.gov.ph/>) has overall responsibility for managing the country's environment and natural resources. Within DENR, the Forest Management Bureau (FMB - <http://forestry.denr.gov.ph/>) is responsible for providing support to the effective protection, development, management and conservation of forestlands, forest resources and watersheds.

The Department of Agriculture (DA) (<http://www.da.gov.ph/>) and the Philippine Coconut Authority (PCA) (<http://www.pca.da.gov.ph/index.php>) have responsibility for monitoring and supporting the production aspects of coconuts and development of the coconut industry in the country.

This interim guidance is aimed at providing basic principles and information to individuals and organizations providing support for the salvaging and utilization of coconuts and trees blown down by Typhoon Haiyan/Yolanda, consistent with the country's relevant legislation, regulations and policies.

Background

The extremely high winds of Typhoon Yolanda resulted in millions of downed coconuts and other trees throughout Regions VIII, VII, VI, and IVB. The most common windblown species was coconut – due to the species' relatively weak and shallow rooting structure – but individual trees of virtually all forest and farm species were uprooted by the powerful winds.

Initial reports from the Philippine Coconut Authority indicate that more than 33 million coconut trees in the seven provinces along the main path of Typhoon Yolanda (Quezon, Guimaras, Iloilo, Negros Occidental, Cebu, Eastern Samar and Leyte) were damaged to varying degrees. Approximately 15 million trees were totally destroyed.

The abundant volume of downed coconuts and fruit and timber trees provides vast volumes of woody biomass potentially available for reconstruction. Initial efforts have been made by the Philippine Coconut Authority (PCA), the Department of Environment and Natural Resources (DENR) and other agencies and organizations to utilize downed coconuts and trees in an efficient and timely manner.

Policy and Legal Context

Republic Act 10593 (revision of RA 8084 "Coconut Preservation Act") regulates the cutting of standing coconuts, requiring permits issued by the Philippine Coconut Authority. No restrictions exist in the instance of coconuts destroyed or downed, as in the case with typhoon-blown coconuts.

Regulations governing the cutting and use of timber trees in the Philippines are complex. Executive Order No. 23, series of 2011, declared a moratorium on the cutting and harvesting of all timber in the natural and residual forests of the entire country. Cutting of timber and fruit trees planted on private lands – provided the trees have been duly registered and certified by the relevant Community Environment and Natural Resources Officer (CENRO) – is allowed, but permits are required to transport the cut trees.

Use of downed trees on private lands, felled by Typhoon Yolanda, is not constrained by the above restrictions on felling, but may require transport permits. Salvaging of timber trees from natural forests falls under the jurisdiction and regulation of DENR, which is in the process of determining specific policies for salvage in the wake of Typhoon Yolanda.

Because of the risk of unregulated chainsaws being used for illegal logging, DENR carefully monitors and controls the ownership and use of such saws. Republic Act 9175 regulates the ownership, possession, sale, importation and use of chainsaws in the Philippines. Importantly, not only are all chainsaws in the country required to be registered with the DENR (through CENROs) to be legally used, anyone wishing to import a chainsaw must obtain authorization from DENR prior to importation. Failure to do so could result in penalties, confiscation of the chainsaw, and/or delays in release of the chainsaw from Customs. There are similar restrictions and permit requirements for portable sawmills. Portable sawmills are required to be registered with the Forest Products Research and Development Institute (FRRDI), Department of Science and Technology (DOST).

Any organization or individual considering the importation or provision of portable sawmills or chainsaws for clearing and salvaging of downed coconuts or trees should consult with DENR authorities to obtain necessary permits and authorizations. Furthermore, the disposition of all chainsaws provided must be strictly controlled and they must be recovered after emergency clearing and lumbering operations. Chainsaws should not be left indiscriminately in local communities where they may later become instruments of illegal logging of natural forests.

Portable sawmills

One of the initial priorities in many typhoon-affected areas is the clearing and utilization of downed coconut stems. Coco lumber has long been used in the Philippines as a low-cost building material and rural Filipinos are familiar with its use in local construction. The huge volume of downed coconut trees offers immediate opportunities to secure large volumes of low-cost lumber for immediate reconstruction. This has the added advantage of clearing agricultural lands for replanting.

For sawing large volumes of coconut and downed trees efficiently, with a minimum of waste, portable sawmills are ideal. Such mills are fast, efficient, relatively easy to use, and can easily be assembled and disassembled, allowing them to be moved from one area of wood supply to the next.

Wood-Mizer is the best known brand of portable sawmill, but there are scores of others (e.g., Logosol, Norwood, Hud-Son, TimberKing, Enercraft/Baker, Mighty Mite, Timber Harvester, Baker, Cook, etc.) available from international suppliers. Locally fabricated portable mills may also be available in Mindanao.



Highly efficient and moderately priced portable sawmills.

The most efficient portable mills use bandsaw technology and are powered by 10- to 30-horsepower engines. Prices range from approximately US\$5,000 (for lighter, smaller capacity mills to around US\$40,000, for larger, higher capacity mills with hydraulic features that make it easy to turn and maneuver the logs during the cutting process.

Desired models of portable mills may not be readily available from suppliers, however. Wood-Mizer, for example, usually fabricates mills to ordered specifications, requiring about a 1-month waiting time. Pre-built mills are reportedly available for shipment, however, from New Zealand and suppliers in other countries.

DENR has provided two portable Wood-Mizer sawmills (one from Manila and one from Nasipit) to the Department of Public Works and Highways (DPWH) in Region VIII, for use in sawing coconut stems into coco lumber to be used for building temporary bunkhouses for displaced residents, among other uses. DENR has reportedly placed an order for five more portable sawmills and other organizations and agencies are reportedly considering the provision of additional portable sawmills.

Chainsaw lumbering

Chainsaw lumbering is also readily being conducted in Leyte and Eastern Samar. Chainsaws are far less expensive than portable sawmills (approximately US\$500 for reasonable quality saws), but are a relatively wasteful way of sawing lumber because of the wide kerf of the chain compared with bandsaws (roughly 1cm kerf for chainsaws compared with approximately .25cm kerf for bandsaws). This is not an issue with abundant, low-value coconut stems, but is more of a concern when sawing higher value hardwood trees.



Chainsaw lumbering of coconut is common in Philippines.

Frame for chainsaw yields higher quality lumber.

Chainsaws are fast in cutting wood, but unless frames are used to guide the saw, the dimensions of lumber cut with chainsaws are likely to be uneven and inconsistent, especially in the hands of inexperienced operators. This also is not a serious problem for rough construction, especially temporary structures.

Chainsaws are very dangerous pieces of equipment and workers often fail to use protective gear – increasing their vulnerability to serious injury. In some typhoon-affected areas, residents are reportedly paying chainsaw operators to cut coconut stems into lumber and in some cases an additional payment to the owner of the downed coconut trunk.¹ It is important to for those cutting fallen coconuts and trees to respect the ownership of the fallen material. This can be challenging, where there are absentee landowners involved.

PCA is providing more than 100 chainsaws to LGUs (registered by DENR) for use in clearing downed coconuts and other trees and for sawing rough lumber. Many other organizations are considering purchasing chainsaws for use in lumbering, especially of downed coconuts.

Organizations considering to provide chainsaws and other cutting equipment should ensure that proper safety equipment is provided and used by sawyers and that all workers are properly trained in safe operation of equipment.

¹ In Barangay Baras, Guiuan, residents reported paying chainsaw operators 700 pesos to cut each coconut stem and an additional 100 pesos to the owner of the downed coconut trunk

Coco lumber treatment and use

Although coconut lumber will last much longer if treated with *Solignum* or *Termitox*, even un-treated coconut lumber can last up to 10 years if it is kept dry. If the lumber gets wet, however, it can be expected to last a maximum of 3-4 years. If attacked by termites, coco lumber can be destroyed in less than six months. Burying coconut lumber in sand along the seashore for about one month gives a mild preservative effect, as a result of salt soaking into the wood, but nails subsequently used with the coco lumber will rust faster because of the salt. Air drying of coco lumber before using it in construction will extend the useable life, but many people in the typhoon affected areas are unable to wait for air drying as materials for reconstruction are needed immediately.

Use of downed hardwood trees

A considerable number of higher value hardwood trees growing on titled lands (e.g., on farms and around houses) and public areas (e.g., along roads, urban parks, around government office buildings, etc.) have also been downed by the typhoon and should be processed carefully to maximize value and utility. Common hardwood species downed include acacia (*Samanea saman*), mahogany (*Swietenia macrophylla*), gmelina (*Gmelina arborea*), and mango (*Mangifera indica*). Where possible, these more valuable trees should be milled with bandsaws or at least by skilled chainsaw operators to minimize waste. The sawn wood should be carefully air dried and used or sold (if privately owned) in accordance with value.

Permits for use and transport of wood from downed trees grown on private lands

DENR has issued directives allowing the utilization and transport of downed trees of all species previously grown on private lands. DENR field officers have been directed to expedite the issuance of permits for use and transport according to released instructions. In practice, under current conditions and need, and DENR's limited capacity to regulate dispersed practices, it is likely that many people will process and utilize downed trees without obtaining permits. Under the circumstances of great need for reconstruction, DENR may consider further relaxing regulations, eliminating requirements for permits for cutting and transporting timber from private lands.

Typhoon damage to natural forests in the uplands

Systematic surveys have not yet been conducted to determine the extent of windblown trees in natural forests in upland areas. Although deep-rooted natural forest trees are far more resistant to wind, given the strength of the Typhoon Yolanda winds, it can be expected that a significant number of trees in the upland forests were downed, especially where direct exposure to the winds was greatest. Further assessments are needed to determine the extent of downed trees in the uplands.

If a substantial volume of timber is found to have been downed in upland forests, DENR may issue special guidance regulating the controlled salvaging and use of these trees in collaboration with CENROs and local people's organizations. In such case, qualified foresters will be dispatched to typhoon-affected forests to mark suitable downed trees to be authorized for salvaging and safeguards will be put in place to ensure no standing trees are felled during such salvage operations

Charcoal making, composting and waste disposal

Charcoal making offers potential income and livelihood opportunities for rural residents, especially in areas where large numbers of trees have been windblown. Simple, low-cost charcoal kilns have been developed by the Forest Products Research and Development Institute (FRRDI), Department of Science and Technology (DOST) for efficient conversion of woody biomass into high-quality charcoal and briquettes. Although values are not high, charcoal making offers immediate opportunities for income from downed trees, branches and other woody debris.

It is possible to make charcoal from downed coconuts, but the high moisture content and low density results in relatively poor-quality charcoal with little commercial value. Nonetheless, local people may wish to make charcoal from downed coconuts as a way of reducing the volume of decaying biomass waste, which otherwise serves as an attractive medium for coconut beetle infestation.

People may also consider making compost from coconut fronds, which may be used to supplement chemical fertilizer in coconut replanting and intercropping. Donor organizations and Government agencies may wish to consider making simple mechanical chippers available to reduce palm fronds to small pieces to facilitate composting. Compost would be particularly useful for intercropping short-maturing crops during the 6-8 years until new coconut plantations become productive.

To further reduce the risk of beetle infestation, sawyers and processors of coconut lumber should be encouraged to burn sawdust and slabs if they are not going to otherwise be used.

Useful links and references

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