

An enabling policy for a more vibrant Philippine bamboo industry

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ABSTRACT. The study assessed the Philippine bamboo policies and determined how its implementation affect the bamboo supply chain. Administrative orders from the Department of Environment and Natural Resources (DENR) were examined, including the DAO No. 59 s. 1993 that requires a Certificate of Verification prior to harvesting of bamboo poles from private land; the Philippine Bamboo Roadmap; and the 2010 Executive Order 879. Discussions were held with key informants such as bamboo growers, traders, and processors on bamboo planting, harvesting, and transport concerns. Results showed that the Philippine bamboo industry is hampered by a regulatory environment that is unfavorable to stakeholders. Thus, a proposed Department Administrative Order was crafted and subjected to regional consultations for feedback from various stakeholders. Involved during the series of consultations were representatives from regional regulatory agencies, academe, local government units, non-government agencies, officers from the Philippine National Police, people's organizations, and private individuals. The draft Department Administrative Order consists of nine chapters: 1) bamboo plantation establishment and development; 2) bamboo harvesting and transport; 3) bamboo processing and utilization; 4) bamboo database, 5) monitoring and evaluation; 6) bamboo research, 7) development, training, and extension; 8) incentives; as well as 9) forest charges and fees and administrative provisions. Cross-sectoral support was obtained through a conference resolution that endorsed its immediate adoption.

Keywords: bamboo harvesting and transport, bamboo policy, bamboo supply chain, certificate of verification, forest policy

INTRODUCTION

Bamboo is a perennial giant grass belonging to the family Poaceae that is either erect or climbing and generally used for weaving, handicraft manufacture, and house construction (FMB 2004). Bamboo stands in the Philippines are classified as privately-owned plantations, privately-owned natural stands, public or state-owned plantations, and public or state-owned natural stands (Razal *et al.* 2012). There is an estimated total of 15,121.82 ha of bamboos in forest lands and 735.41 ha in private lands (Dolom *et al.* 2012). Bamboos found in forest lands are considered and lumped with other non-wood or “minor” forest products as stipulated in Presidential Decree (PD) 705. Bello & Espiloy (1995) considered bamboo as minor forest products in view of: 1) the abundance of wood from natural forests particularly the lesser known or commercially less accepted species for the reproduction of reconstituted panel products; and 2) constraints in cultivating bamboo, which may be monocarpic, fire tender, and easily bruised.

The multiple uses of bamboo contributed to the achievement of Sustainable Development Goals (SDGs) such as promoting poverty reduction (SDG 1), clean energy use (SDG 7), sustainable housing (SDG 11), efficient and sustainable consumption and production (SDG 12), climate action (SDG 13), life on land (SDG 15), and effective global partnerships (SDG 17) (Monaco 2019). The popularity of bamboo as green construction material of the future plays a significant role in the transition towards a more sustainable use of raw materials if the right policy measures and industry adaptations are taken in considerations (van der Lug 2019).

The harvest, collection, movement, and transportation of bamboo in the Philippines are subject to government regulation. The supposed intent is to protect the natural bamboo stands, presumably from illegal or over-harvesting.

Several policies were crafted to protect bamboo in the natural forests. The Department of Environment and Natural Resources (DENR), as the national agency responsible for the management of the country's environment and natural resources, has jurisdiction on all aspects of bamboo production and utilization. These include nursery establishment, production in plantations, as well as harvesting and transport of bamboo poles. Bamboo, as a non-timber forest product, is governed by PD 705 and Forestry Administrative Order (FAO) 11. Forest charges are imposed on various bamboo species collected from natural stands, in accordance with PD 705, and other laws or regulations such as Department Administrative Order (DAO) No. 80 s. 1987, Republic Act (RA) 7161, and DAO No. 19 s. 1995. In the transport of bamboo poles, DAO No. 59 s. 1993, requires a certificate of verification (CoV) to harvest and transport bamboo poles from private lands. The issuance of CoV presumably aims to prevent illegal harvest of bamboo and its over-exploitation in forestlands.

A round table discussion (RTD) meeting at the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) was held on 4 October 2016. According to bamboo growers, farmers, traders, and bamboo processors, the CoV serves as a disincentive to the industry's development. Even with a CoV, the transport of bamboo poles is still subject to scrutiny at checkpoints and has resulted to additional expenses along the bamboo value chain. A second issue identified during the meeting was the need for a centralized bamboo information network that can provide comprehensive and updated information on availability, sources, demand, and prices of bamboo. Noting these concerns, a policy research was conducted with the following objectives: 1) to provide a scientific basis for an enabling policy environment on bamboo addressing societal needs; 2) generate a bamboo database for bamboo resource information management and dissemination; and 3) formulate a draft policy to encourage bamboo resource development by both the government and the private sector.

METHODOLOGY

Primary data were gathered using combined social policy research tools such as key informant interviews (KIIs), focus group discussions (FGDs), field observation, and stakeholders' consultation. Sampling was done using a non-probability snowball sampling technique due to limited records and information on bamboo processors, growers/farmers, and market for bamboo and bamboo products.

Interviews and field observations were done in coordination with selected regional and provincial offices of DENR, the Department of Trade and Industry (DTI), Community Environment and Natural Resources Offices (CENRO), provincial and municipal government units, and people's organization (POs) in community-based forest management areas.

Study sites were purposively selected to represent the major bamboo production areas and stakeholders in the Philippines. Regions were chosen based on reported existence or non-existence of bamboo production, the presence or absence of bamboo-based enterprises, and the willingness to enforce or leniency in bamboo policy implementation. In Luzon, provinces

included in the study were Ilocos Norte, Abra, La Union, Pangasinan, Pampanga, Bulacan, Malabon, Laguna, Batangas, Rizal, Camarines Sur and Norte, Albay, as well as Palawan. Study sites in Visayas were Iloilo, Bohol, Cebu, and Bacolod while Bukidnon, Davao del Norte, Davao City, and were the chosen areas in Mindanao.

Secondary data were gathered from both national and regional offices of DTI, DENR and the Department of Agriculture (DA). Data gathered were used in the: 1) formulation and drafting of a DAO on bamboo; 2) conduct of benefit-cost analyses to evaluate the "with CoV" and "without CoV" policy options (results on this are presented in a separate paper); and 3) development of an internet-based, interactive information system. Outputs were presented in regional (Davao, Cebu, and Quezon City) and national (Metro Manila) consultations for additional inputs and refinements.

CoV framework

Forest policies aim to promote sustainable forest management. The DAO 1999-53 is the basic policy of government to monitor movement of timber and other forest products without hindering transport from point of origin to destination or market. **Figure 1** shows that existing forest policies intended to protect and enrich the natural forest through the establishment, wise utilization, and efficient transport of legally harvested forest products including bamboo.

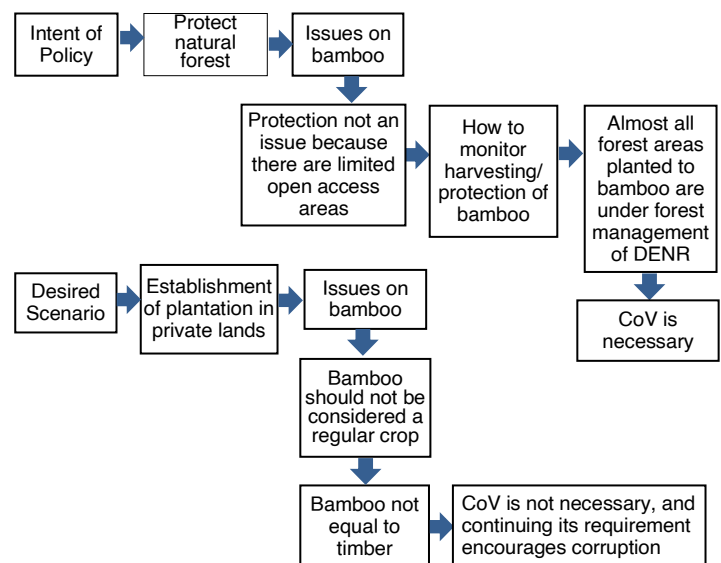


Figure 1. The forest policy framework showing the rationale for the Certificate of Verification (CoV) requirement for bamboo harvesting in private lands.

How much land planted to bamboo needs special protection?

As shown in **Table 1**, 2.8 M ha (FMB 2017) of tenured areas and 10.05 M ha of established timberland are assured of maintenance and protection. The community-based forest management agreement (CBFMA) has the highest land coverage, with an area of 1.6 M ha followed by the Integrated Forest Management Agreement (IFMA) areas with 961,760 ha, while the timber license agreement (TLA) areas accounted for 119,560 ha. For tenured areas like CBFM, an approved community resources management framework (CRMF) and resource use permit (RUP)

Table 1. Tenure holders with corresponding area coverage (DENR 2017).

Tenure Holders	Area (ha)	Percent (%)
Timber License Agreement (TLA)	119,560	4.26
Community-Based Forest Management Agreement (CBFMA)	1,615,598	57.63
Integrated Forest Management Agreement (IFMA)	961,760	34.31
Tree Farm Lease Agreement (TFLA)	5,979	0.21
Agroforestry farm lease agreement (AFFLA)	398	0.01
Socialized Industrial Forest Management Agreement (SIFMA)	32,217	1.15
Private Forest Development Agreement (PFDA)	5,274	0.19
Forest Land Grazing Management Agreement (FLGMA)	58,620	2.09
Special Land Use Permit (SLUP)	71.1	0.00
Special Land Use Lease Agreement (SPLULA)	69.63	0.00
Forest Land Use Agreement for Tourism Purposes (FLAgT)	297.09	0.01
Forest Land Use Agreement (FLAg)	3,516.50	0.13
Total tenured area	2,803,360	100%

are required to harvest non-timber forest products (NTFPs). In the case of IFMA and the socialized forest management agreement (SIFMA), an approved Integrated Annual Operations Plan (IAOP) is required. As these areas are under some form of tenure, respective tenure holders need to protect the resources within, including bamboo.

Can the monitoring of bamboo harvesting contribute to its protection? All bamboos planted within forestlands are under the management, monitoring, and protection of DENR. Thus, natural resources policy makers deemed it necessary to require the issuance of CoV by the DENR-CENRO among private landowners for the agency to fulfil its regulatory function over bamboo resources. Ideally, bamboo plantations should be established in private lands. Private landowners expressed interest to invest in bamboo plantation development as discussed during the PCAARRD RTD last 2016. However, several issues came up relative to the CoV requirement, namely: 1) bamboo should not be considered as a regular crop; 2) it is not “equal” to timber and therefore it should not be treated like timber; and 3) private ownership of land entitles the owner more freedom to choose what to plant, and consequently, what to harvest from the land sans regulatory tools like the CoV.

RESULTS AND DISCUSSION

Seventy-eight respondents participated in the KIIs, with 28% coming from government agencies such as DENR, DTI, and Local Government Units (LGUs). Bamboo processors comprised 35% of the respondents, growers (23%), and traders (14%).

Twenty-two respondents from the government agencies and LGUs were aware of bamboo regulations because their work deals with activities pertaining to bamboo production, harvesting, utilization, transportation, and marketing. These respondents are involved in the issuance of harvesting and transportation permits, as well as in the monitoring and enforcement of policies on bamboo and related products. The same level of awareness or knowledge about bamboo regulations cannot be said of growers, traders, and processors. Only 19 or 34% from these respondents were aware of bamboo policies being implemented in national or local level particularly on the requirements in the transport of bamboo poles.

Both forestlands and private lands can be sources of bamboo poles. Bamboo in forestlands can either be natural or plantation-grown, and private lands can either be plantation or household backyard stands. Kawayan tinik and *botong* are the species that most growers have in their plantation or backyard. Bamboo species planted or growing in private lands included giant bamboo (also called *botong* in some areas) and *bayog*.

Despite existing regulations, procedures differ when bamboo poles are transported, depending on the location. Probably, this is explained by our interview finding that more than 50% of growers were not aware of the bamboo policies and requested for information dissemination. Most areas require bamboo traders to secure a *barangay* certification or permit to transport. Iloilo traders must have a municipal permit. Manufacturers of bamboo products call for a bamboo inventory to know the source areas of bamboo poles. Some bamboo traders are dependent on growers who own private lands and backyards, while others own land and both use and sell bamboo poles. Kawayan tinik is the most commonly planted species, but other species such as *buho*, *bayog*, *sina*, and *taywanak* (or Kawayan kiling) can also be grown. Apart from the requirements mentioned, traders secure the following documents to transport bamboo poles: CoV or permit to transport, mayor’s permit, and business permit.

During transport, traders pass through three to six checkpoints, depending on how far the destination is from the source. Notably, transporting bamboo in Iloilo does not entail passing through any checkpoint. In other places however such as Laguna, Abra, and Bicol Region, aside from the stationary checkpoints, traders encounter mobile patrols that require inspection. Aside from bamboo poles, processed products such as *amakan/sawali*, trellis, and bamboo furniture are also moved from one locality to another. In Palawan, the most visible bamboo hauled on motor vehicle-powered carriages was the *buho*. **Table 2** shows the top three bamboo products transported in Luzon, Visayas, and Mindanao as observed from the project sites visited. Bamboo poles are used for fish pens, barbecue sticks, and banana props especially in Visayas and Mindanao. Specialized bamboo products such as toothpicks, chopsticks, and barbecue sticks used by the fast food chain, *Mang Inasal*[®], produced from the Municipality of Maasin, Iloilo Province were also recorded.

Twenty-seven or 35% of bamboo processors interviewed used bamboo species such as Kawayan tinik, giant bamboo, *buho*, *botong*, and *bayog* sourced from within or from nearby or adjacent provinces. Fifteen out of 17 bamboo manufacturers in the different municipalities of Laguna source bamboo poles from within the province (Cavinti, Nagcarlan, Magdalena, Sta. Cruz, Pakil, and Luisiana,) while others obtain bamboo poles from adjoining provinces like Quezon, Rizal, Batangas, and Cavite or

Table 2. Top three bamboo products being transported in Luzon, Visayas, and Mindanao.

Location	Bamboo products
Luzon (Ilocos Norte, Abra, La Union, Pangasinan, Pampanga, Bulacan, Laguna, Batangas, Camarines Sur), Palawan	Poles (fish pens and cages), furniture, nipa hut
Visayas (Iloilo, Cebu, Bohol)	Bamboo skewers, chopsticks, and toothpicks, <i>amakan/sawali</i> , nipa hut
Mindanao (Misamis Oriental, Bukidnon, Compostela Valley, Davao del Norte)	Poles (fish pen, cages, and props), <i>sawali</i> , furniture

from as far as Cagayan de Oro City, Mindanao (BOI 2016 and DTI 2020). The most common bamboo products produced are furniture such as *sala* sets and *bahay kubo*, which are high in demand among operators of resorts and restaurants. At times, inadequate supply of raw materials and lack of skilled human resources affect production of these in demand bamboo-based products.

In terms of awareness, respondents from the government agencies and LGUs were mostly aware of the bamboo policies as all are involved in activities pertaining to bamboo. Bamboo-related activities that the government respondents perform are as follows: deal with monitoring and enforcement activity (36%); issuance of permit (32%); and National Greening Program (NGP) and watershed activities. In addition, the respondents consisting of checkpoint personnel belong to the enforcement unit of the DENR. All respondents said that the main function of the checkpoint is to monitor transport of forest products and verify permits.

Analysis of existing and proposed bamboo policies

Bamboo is a perennial, woody stemmed grass known for its rapid growth and variety of uses. There are several uses of bamboo such as substitute for wood in making furniture, construction materials, handicraft, as a raw material for pulp and paper, textile, as biomass fuel (in the form of charcoal, pellets, and chips), and as source of food and beverages. In addition, bamboo plays a role in environmental conservation and protection; in generating employment and providing livelihood that contributes to economic development; and in climate change mitigation and adaptation.

There have been several policies since 1976 that directly or indirectly cover bamboo. The basic policy is anchored on PD 705 and FAO 11 that cover all the NTFPs in the country, from production, harvesting, transport, and marketing. Other policies crafted to support the bamboo industry in the country were mostly designed as regulatory measures for plantation owners in either public or private lands.

DAO No. 1994-07, the policy on harvesting and transport of bamboo poles from public lands, requires a Certificate of Origin. Some officials and traders argued that the CoV is only needed when the bamboo will be transported outside the province. This “transport” permit has a short validity period of three days and needs to be renewed as soon as it expires.

In forestlands, the study shows the redundancy of requiring a Certificate of Non-timber Forest Products Origin (CNTFPO) along with other requirements for tenured landowners, particularly the CBFM holders. The approval of the CRMF of CBFMA has gone through a rigorous process and should be sufficient for the transport of bamboo resources harvested from CBFM tenured lands. This sentiment was expressed by the bamboo growers and processors during the interviews and consultations.

Naturally-growing bamboos in forestlands are subject to forest charges as prescribed in DAO 2000-63. Current rates (on a per meter basis) differ depending on the species. Kawayan tinik and kawayan kiling command a higher forest charge. While planting of bamboo in plantations is encouraged, bamboo planted in CBFM areas are subject to production-sharing agreement of the gross sales based on DAO 98-42. **Table 3** shows several existing policies and proposed bills related to bamboo.

Executive Order (EO) No. 879 created the Bamboo Industry Development Council (PBIDC) to lead in promoting the bamboo industry in the country. An offshoot of EO 879 is the Philippine Bamboo Roadmap that supports several programs and projects to boost the industry. However, the limited availability of funds hindered full implementation of target activities. EO 879 also empowers the PBIDC to support private investors and other concerned stakeholders as they lobby for the deregulation of NTFP in private lands. Some bills pending in Congress (**Table 3**) seek to strengthen the PBIDC in guiding the Philippine bamboo industry.

Analyses of bamboo-related policies showed the need for a specific policy designed to jumpstart development of the bamboo industry to help attain the country’s environmental, sustainable, and climate change adaptation and mitigation goals.

CoV as a requirement for transport of bamboo planted in Alienable and Disposable (A&D) land

The CoV is a document that must be secured by private landowners from the DENR-CENRO in the locality to show that the logs, lumber, or any NTFPs including bamboo are legitimately sourced from private lands. The CoV must indicate the quantity, volume, type of forest products, and destination/consignee of the commodities (DAO No. 1994-07). As per Citizen’s Charter Process No. 4 at the DENR-CENRO, eight hours is needed for service processing of CoV if the required documents are complete and the corresponding fee of Php 50.00 (USD 1.00) and an oath fee of Php 50 (USD 1.00) are paid. CoV is valid for three days, and every shipment of forest product must possess a new and separate CoV.

Some of the issues raised by the respondents during the key informant interviews and round table discussions were the following:

1. The length of time to process the CoV depends on the availability of CENRO officials who will examine and sign the documents.
2. The presence of checkpoints where the authenticity of the CoV is examined, invariably result to corruption in some cases, presumably at the request of the one transporting the products to avoid inconvenience and delays in the transport of bamboo.
3. Limited information on the part of bamboo growers/processors on policy issuances by the DENR and LGU.

Table 3. Policies and proposed bills related on bamboo.

Year Issued	Existing Policies	Highlight/Salient Features
2016	Special Order 2016-639	Designating ERDB as the overall coordinator in the implementation of bamboo plantation development and mangrove rehabilitation nationwide.
2016	DAO No. 7 – DENR Manual of Authorities on Technical Matters	Adopted to delegate authorities and delineate functions in the Central and Field Offices Transport of Non-timber forest products such as bamboo coming from private lands: • Limits of Authority – Certification • Approving Authority – CENRO
2015	EO No. 193 – Expanding the coverage of the National Greening Program (eNGP)	In support of this policy, the DENR launched Bamboo Plantation Development Project (BPDP) that targets to establish 256,995.90 ha from 2017– 2022. For the past thirteen years, 62,230 ha of bamboo plantation were established through the NGP and the eNGP.
2011	DAO No. 11 – Guidelines and Procedures in the Implementation of the NGP	Section 2.2.1 Production of planting materials including bamboo in nurseries and other appropriate sites.
2011	Executive Order No. 26 – NGP	The DENR was able to establish 16,442 ha of bamboo plantations in 15 regions from 2011–2015.
2011	DMC No. 30 – Directing full implementation of the Philippine Bamboo Industry Development (PBID) Program issued by the Office of the President	Harmonizing PBID and NGP programs.
2004	EO No. 318 – Promoting Sustainable Forest Management in the Philippines	Encourages the establishment of non-timber forest products including bamboo in public and private lands. It also promotes the enhancement of economic and political benefits and attainment of self-sufficiency in the country's wood requirements.
2000	DAO No. 63 – New Rates of Forest Charges Pursuant to Republic Act No. 7161 (R.A. No. 7161) and Based on the 1999 FOB Market Price of Forest Products	Applicable to bamboos on public lands/forests. The high current rates of forest charges may deter farmers from collecting bamboo such as Kawayan tinik/Kawayan kiling, <i>bayog</i> , <i>boho/bulo</i> other species of erect bamboos from the forest, as the payment will eat up 30% of the farm gate value they can receive from each pole.
1999	DAO No. 20 – Supplemental Guidelines Governing the Registration, Harvesting, Transport, and Marketing of Timber By-Products Coming from Private Plantations Within Private Lands or Tax Declared Alienable or Disposable Lands	States that the private tree or bamboo plantation owner need not request for a cutting permit for a registered plantation of non-premium species.
1997	DAO No. 4 – Rules and Regulations Governing the Industrial Forest Management Program	Invests IFMA plantations owners with the “right” to export forest products from the plantation, but in accordance with the government allocation system. Said “right” of IFMA holders to harvest, sell and utilize the trees and crops that they themselves established, in whatever marketable form(s) was categorically affirmed by DAO 1999-53.
1996	DAO No.26 – Revised Guidelines Governing the Harvest and Transport of Planted Trees and Non-Timber Products within Social Forestry Areas	In Social Forestry areas, a 100% inventory of planted bamboo is required before harvesting and is allowed for a maximum period not to exceed six months, subject to availability of poles to be harvested.
1994	DAO No. 7 – Revised Guidelines Governing the Issuance of Certificate of Origin of Logs, Timber, Lumber and Non-Timber Forest Products	Requires Certificate of Origin for public lands/forest lands and CoV for private lands for harvesting and transporting bamboo.
1970	Forestry Administrative Order No. 11 – Revised Forestry License Regulations	Cutting permits should be secured prior to collection and harvesting.
Proposed Bills		
2018	Senate Bill No. 1478 – Institutionalizing Bamboo Industry Development in the Philippines through the creation of Bamboo Industry Research and Development Center (BIRDC)	This bill is a substitute bill for SB 652, 665 and 716 earlier filed in the 17 th Congress, basically consolidating bills authored by Senators Aquino IV, Legarda, Villar, and Zubiri.
2018	House Bill No. 904 – An Act Institutionalizing a Philippine Bamboo Industry Development Program	Authored by Hon. Deogracias Victor B. Savellano. The objectives of this Act are: 1) to promote Philippine bamboo industry by providing a development program; 2) to discover and evolve technologies that involve bamboo; and 3) to provide incentives to investors.

Table 3. Policies and proposed bills related on bamboo (*Cont.*).

Year Issued	Existing Policies	Highlight/Salient Features
2018	House Bill No. 6783 – An Act Institutionalizing Bamboo Industry Development in the Philippines, Creating the Bamboo Industry Research and Development Center (BIRDC), Appropriating Funds Therefor and for other Purposes	Authored by Luis Rey F. Villafuerte, Jr. The bill shall support indigenous, scientific, and technological capacities and skills in sustainable utilization, propagation and promotion of bamboo as furniture, food, construction, and design materials and other uses.
2017	House Bill No. 6625 (formerly HB 4577) – An Act to Classify Bamboos as Unregulated Forest Product and for other Purposes	Authored by Hon. Deogracias Victor B. Savellano. This Act will promote the development of the Philippine bamboo industry by streamlining policies that constrain its growth, encourage investors to invest in the establishment of plantations and processing facilities, and provide sustainable livelihood to communities in rural area.
2017	House Bill No. 4812 – An Act Institutionalizing the Bamboo Development Program and Providing Funds Therefor and for other Purposes	Authored by Hon. Emmeline Y. Aglipay-Villar. The Philippine Bamboo Industry Development Council aims to make the Philippine Bamboo Industry competitive in the local and international markets while providing employments and providing opportunities for rural-based, micro, small, and medium community enterprises to flourish.

4. There is clamor that bamboo should not be treated as similar to timber, which is highly regulated. Bamboo as a grass regenerates fast, so cutting and sale should be deregulated.
5. Market for bamboo is limited, so it should not be regulated.
6. There is no existing policy that facilitates or encourages bamboo growers and processors to invest in bamboo production and utilization.
7. Checkpoints where bamboo shipments are inspected should be done by DENR personnel and that inspection need not be done in all checkpoints along the way.
8. LGUs should not collect fees for permits as this adds to the cost incurred by bamboo growers/processors.

This policy assessment indicates that the CoV is not uniformly implemented in all regions of the country. In regions with adequate bamboo resources, it was odd that, DENR records showed little or no applicants for CoV. According to DENR respondents, bamboo is not a priority concern – instead, CoV implementation is focused on planted trees in private lands. However, if applicants apply for CoV to harvest bamboo, the DENR-CENRO personnel facilitates the issuance of CoV consistent with the policy requirements.

Bamboo growers view the CoV requirement as one that hampers the development of the Philippine bamboo industry. Potential investors believe that CoV is detrimental to investment in bamboo plantation development, especially in private lands. This is the singular issue raised by both bamboo growers and processors. They claim that interested investors are discouraged because of accrued costs from the government requirements, particularly among private landowners. In most cases, the issuance of the CoV is usually delayed and protracted because of the unavailability of DENR-CENRO personnel and the inspection/inventory team. Furthermore, the cost of conducting the bamboo inventory is an added burden because the transportation cost and food of the inspection/inventory team are shouldered by the private landowner. To facilitate the process, most of the growers admitted to paying more than the corresponding fees for CoV processing so that the document could be released without the conduct of a CENRO-led inventory.

There is also a need to understand the nature of bamboo as a resource and commodity. Questions on why grass should be regulated, how to tackle the dwindling interest among the young generation to go into bamboo farming and harvesting, and whether bamboo transport does cover for illegal log transport, need to be addressed. It is then proposed that advocacy work targeting not only the general public but also men and women in uniform, bamboo farmers and producers, and more importantly, people manning regulatory offices, of the importance of a concerted effort to promote, develop, and support the bamboo industry once the constraining policy environment is addressed. It seems that it is not clear to many stakeholders how the policy of requiring CoV serves the purpose of protecting natural bamboo stands.

Proposed DAO on regulations governing bamboo resources

Following the conduct of a series of consultations, a draft DENR DAO, “Rules and Regulations on the Establishment, Management, and Sustainable Development of Bamboo Plantations, and for Other Purposes” was formulated. The draft DAO is aligned with PD 705, FAO 11, EO 192, RA 7160, 7161, and 879, and other related government policies that directly or indirectly ensure the sustainable productivity of bamboo. The initial draft of the DAO has nine chapters: 1) Title, Scope and Coverage, Objectives; 2) Bamboo Plantation Establishment and Development; 3) Bamboo Harvesting and Transport; 4) Bamboo Processing and Utilization; 5) Bamboo Database, Monitoring, and Evaluation; 6) Bamboo Research, Development, Training, and Extension; 7) Incentives; 8) Forest Charges and Fees; and 9) Administrative Provisions.

The scope applies to all bamboo species, whether indigenous, endemic or exotic, found to grow, thrive, or planted in private and forestlands, mineral lands, national parks or agricultural lands, exotic species being subject to pertinent rules and regulations on its propagation in the country. The objectives of the proposed policy are as follows: 1) to ensure the sustainable productivity, availability, and access to bamboo resources of dependent industries, communities, and other stakeholders to generate livelihood opportunities and additional sources of revenue; 2) to provide a system for sustainable harvesting, transport, and

efficient utilization of bamboo resources; 3) to establish vibrant bamboo enterprises to contribute to the Philippine economy while promoting inclusive growth; and 4) to create a policy environment supportive of the development of the bamboo industry to attain the country's goal for environmental sustainability and climate change adaptation and mitigation.

The proposed policy aims to encourage development of bamboo plantations in both public and private lands. For developing a plantation within forestlands, the requirements in availing a tenurial instrument must be complied with. For bamboo planted in private lands, no permit is needed for the harvesting and transport as long as the plantation is registered with the CENRO of DENR. The owner of backyard bamboos shall not secure registration from the concerned CENRO. The establishment of the lawful origin of the products during transport shall rest on the shipper/transporter of the products. The owners of backyard bamboo are advised to form an association for registration purposes. The DENR is still vested with the responsibility to monitor and evaluate the performance of the bamboo growers, both in forestland and private lands.

Forest charges and fees shall continue to apply to naturally grown bamboo harvested in forest lands, being an NTFP. Bamboo grown in private lands shall be free from forest charges. For bamboo planted in natural forestlands through government or any funding agencies, proceeds shall be subject to production sharing agreement.

The establishment of bamboo processing plants shall be promoted consistent with the industrialization program and must be registered with the DTI. The production of bamboo poles shall be based on sustained yield capacity and poles shall be disposed of only to legitimate bamboo processing plant holders and users. Selective cutting is a traditional method or practice where only mature, harvestable culms or poles are cut. In the case of Kawayan tinik, the retention in the clump four poles per age group within a four-year cycle is prescribed.

The draft DAO also proposes the development of an integrated bamboo information network system to address issues on the lack of awareness on availability of bamboo resources. The information system shall cover the following but need not be limited to: 1) bamboo plantations; 2) bamboo processors, and 3) markets. The system shall be the source of information of the industry and the general public on the supply and demand status, location of the bamboo plantation and processors, as well as updated prices and market demand.

Academic and research institutions shall be strengthened to perform research and technology development on bamboo propagation, site-species matching, sustainable harvesting, processing/ utilization, and marketing. Training and extension programs on bamboo production and utilization shall be promoted to capacitate the bamboo growers and processors. With support from other relevant government and non-government institutions, the DENR shall promote bamboo program for sustained public information and advocacy campaign for its conservation, protection, development, and utilization. Different measures to provide incentives were identified to encourage stakeholders to invest in, and to ensure the sustainability and security of such investments.

Database information on bamboo

Round table discussion and KIIs with various stakeholders revealed that information on bamboo are inaccessible, outdated, incomplete, and contained in sporadic reports. There is no institution that manages a database on bamboo resources and enterprises. Hence, a prototype internet-based, interactive infrastructure for managing bamboo database and information system was developed to capture the following data: location, species, area, age, bamboo growers, bamboo processors, bamboo products, markets, and other relevant information. The features, resource requirements, and identification of possible host institution are also prescribed by the study. During the regional and national consultation workshops, most findings were validated by the participants, who expressed support by affixing signatures to an approved resolution.

CONCLUSION

The current policy on the transport of bamboo, which requires securing a CoV, is an extension of the regulatory policy on trees that are eco-physiologically different from bamboo. A grass can tolerate regular cutting because the rhizomes can form new shoots from under the ground. Policies designed to prevent the unhampered cutting of trees are, therefore, incongruent with the nature of bamboo, whose regenerative capacity is evident in how entire bamboo stands toppled by a typhoon can restore itself back to life.

The CoV requirement for harvesting and transporting bamboo from private lands is recommended for removal. A DAO entitled "Regulations Governing Bamboo Resources" was drafted to enable the development of the Philippine bamboo industry by providing less regulations on various aspects of bamboo production, harvesting, marketing, and utilization. Simplification of requirements for harvesting and transporting bamboo particularly from private lands was prescribed, so that only the certificate of registration, which is a one-time requirement, needs to be shown for all transactions pertaining to bamboo. On the other hand, the absence of a regularly updated bamboo database that can be easily accessed by stakeholders of the bamboo industry was addressed through development of an internet-based, interactive infrastructure for providing and sharing information on bamboo. Prescribed features and resource requirements were described so that the possible host institution will not start from scratch in implementing this much-needed facility in support of the Philippine bamboo industry.

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