

Paqueo, Vicente B.; Israel, Danilo C.

Working Paper

Planting seeds of self-defeat: Effects of unrealistic regulations on the Caraga wood industry and forest conservation

PIDS Discussion Paper Series, No. 2016-51

Provided in Cooperation with:

Philippine Institute for Development Studies (PIDS), Philippines

Suggested Citation: Paqueo, Vicente B.; Israel, Danilo C. (2016) : Planting seeds of self-defeat: Effects of unrealistic regulations on the Caraga wood industry and forest conservation, PIDS Discussion Paper Series, No. 2016-51, Philippine Institute for Development Studies (PIDS), Quezon City

This Version is available at:

<https://hdl.handle.net/10419/173572>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

Planting Seeds of Self-Defeat: Effects of Unrealistic Regulations on the Caraga Wood Industry and Forest Conservation

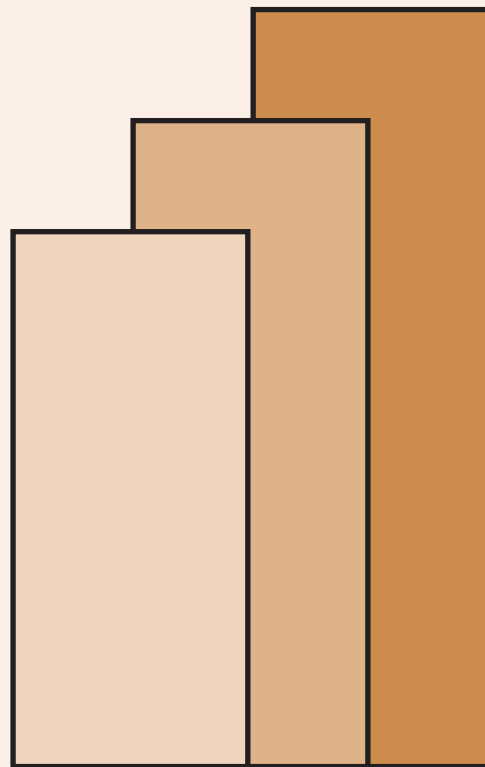
Vicente B. Paqueo and Danilo C. Israel

DISCUSSION PAPER SERIES NO. 2016-51

The *PIDS Discussion Paper Series* constitutes studies that are preliminary and subject to further revisions. They are being circulated in a limited number of copies only for purposes of soliciting comments and suggestions for further refinements. The studies under the *Series* are unedited and unreviewed.

The views and opinions expressed are those of the author(s) and do not necessarily reflect those of the Institute.

Not for quotation without permission from the author(s) and the Institute.



December 2016

For comments, suggestions or further inquiries please contact:

The Research Information Staff, Philippine Institute for Development Studies

18th Floor, Three Cyberpod Centris – North Tower, EDSA corner Quezon Avenue, 1100 Quezon City, Philippines

Tel Numbers: (63-2) 3721291 and 3721292; E-mail: publications@mail.pids.gov.ph

Or visit our website at <http://www.pids.gov.ph>

Planting seeds of self-defeat: Effects of unrealistic regulations on the Caraga wood industry and forest conservation

Vicente B. Paqueo and Danilo C. Israel

Abstract

Years of rapid and indiscriminate logging of Philippine forests coupled with little reforestation has led to more frequent, widespread, and damaging natural disasters such as floods, landslides, and other environmental damages. With strong political will and noble intentions, President Benigno S. Aquino III issued Executive Order 23 (EO 23) in 2011. This order sought to protect the country's natural forests by imposing a total ban over logging activities and imposing stronger measures against illegal cutting. Unfortunately, EO 23 intensified the rent-seeking behavior among the regulating agencies and has led to damaging unintended economic and social consequences without accomplishing much of its avowed objectives. Moreover, there are other potentially more effective ways of protecting Philippine forests. On this score, would it possible to achieve a win-win strategy where natural forests are effectively protected without paralyzing the wood industry that provides incomes and jobs?

I. Deforestation: its impact and underlying causes

Deforestation¹ has been a major natural resource and environmental issue in the Philippines with the country losing as much as 10 million hectares of forests since the 1930s. Back in 1934, forests comprised a significant 57 percent of the country's total land area. By 2010, however, the forest cover has fallen to only 23 percent. In 2011, it was estimated that the country only around had 7.2 million hectares² of forests left (Carandang et al., 2013). From 2000 to 2005, the annual forest cover loss was estimated at 157,000 hectares. Over all, the Philippines is among those countries with the highest deforestation rates in the world.

Globally, the costs of deforestation are as significant as the problem itself, the annual loss of tropical forests represents a loss in forest capital valued at USD 45 billion (Tejaswi, 2007). In the Philippines, the total foregone value of resources lost due to losses in forest areas from 1992 to 2003 was estimated at around PHP 118.2 billion for an annual average of PHP 10.7 billion (Carandang, 2008). Aside from the direct economic impact, there are numerous bio-physical short- and long-term costs: watershed destruction, biodiversity loss, excessive carbon discharges, soil erosion and loss of soil fertility, desertification, freshwater loss, landslides and flash flooding, among others. Negative socioeconomic effects of deforestation include lost agricultural and forestry outputs that lead to reduced incomes, marginalization of upland communities including cultural minorities, increased morbidity and mortality, and loss of property due to the loss of forest protection against natural disasters.

While the actual costs specifically of floods and landslides due to deforestation have yet to be quantified for the Philippines, these are significant as well. Generally, natural disasters have resulted to great loss of lives, homes, livelihood and services in the country (SEPO, 2013). From 2000 to 2012, the death toll attributed to natural disasters reached 12,899 in addition to causing injury to 138,116 persons. In the same period, they affected more than 71 million individuals and rendered almost 375,000 persons homeless. In totality, the socio-economic damages of natural disasters in the country have been estimated at USD 3.37 billion with average annual damages of USD 251.58 million.

In general, the direct causes of deforestation include logging, land conversion of forests for agriculture and cattle-raising, urbanization, mining and oil exploitation, acid rain, and fire (Tejaswi, 2007). Logging, whether legal or illegal, was identified as a direct driver of deforestation and forest degradation (Carandang et al., 2013). The underlying causes of deforestation are multiple and interrelated.

¹ Deforestation is defined as the conversion of forested areas to non-forest land use such as arable land, urban use, logged area or wasteland. According to FAO, it is the conversion of forest to another land use or the long-term reduction of the canopy cover below the 10 percent threshold (Tejaswi 2007).

² This figure is already a dramatic rise from recorded forest area in 1997 of 5.392 million hectares. However, this increase is mainly due to a change in the forest definition from earlier 40 percent crown cover to 10 percent crown cover in 2011, which resulted in inclusion of those areas which were not defined forests before (Carandang et al. 2013).

For example, macroeconomic strategies implemented provide a strong incentive for short-term profit-making instead of long-term sustainability. Corollary to that, deep-rooted social issues—inequalities in land tenure and discrimination against indigenous peoples, subsistence farmers, or poor people in general—exacerbate the problem. Other important underlying causes are related to governance such as weak institutional capacities, weak law enforcement, corruption and collusion.

II. Solving the problem through EO 23

Over time, program and project initiatives from the Philippine government and other sectors to address deforestation and forest degradation have been executed and reviewed (Israel, 2015). Likewise, various policies implemented to address deforestation, including logging ban and moratorium policies, have also been assessed for their effectiveness (e.g. Carandang et al., 2013), but judging from the continued persistence of the problem, it has become apparent that these programs, projects, policies as well as the overall efforts to tackle deforestation can only be judged as partially successful, if not a total failure.

The Executive Order 23 (EO 23), entitled “Declaring a moratorium on the cutting and harvesting of timber in the national and residual forests and creating the Anti-Illegal Logging Task Force”, that was issued by President Benigno Simeon Aquino III in February 2011. EO 23 implemented an indefinite log ban in the country. It supersedes all executive orders, rules and regulations and other issuances which are inconsistent with the order. Among others, EO 23 restricted the Department of Environment and Natural Resources (DENR) from issuing logging permits and contracts in all natural and residual forests, including renewing tree cutting permits in all forests all over the country. EO 23 also tasked the DENR to prohibit the operation of sawmills, veneer plants, and other wood processing plants that are unable to present proof of sustainable sources of legally cut logs for a period of at least five years within one month from its effectivity. Furthermore, it ordered the DENR to strictly implement a forest certification system in accordance with the United Nations standards and guidelines to ascertain the sustainability of legal sources and chain of custody of timber and wood products nationwide. As exception to the rule, EO 23 stated that tree cutting associated with cultural practices pursuant to the Indigenous Peoples Right Act may be allowed but subject to existing guidelines of the DENR.

While there is no available study at present that analyses in detail the actual effects of EO 23 at the national level, Durst (2001) explained that in the Asia-Pacific, logging restrictions—though intended to halt deforestation—more often led to negative impacts. In particular, the Philippines’ total ban on logging in old-growth forests in the 1990s resulted into intensified harvesting of secondary forests that diminished the opportunities for rehabilitation and maturation into high-quality stands (Carandang et al., 2013). More recently, the Philippine Daily Inquirer (2012) reported that EO 23 has not stopped illegal logging despite the existence of the Anti-Illegal Logging Task Force. Reportedly, illegal logging thrives and has

intensified because EO 23 has only stopped legitimate logging by holders of long-term licenses, contracts and agreements.

III. How EO 23 affected the CARAGA timber industry

The general intention of EO 23 is laudable and it could have significantly reduced the overexploitation of natural forests in the Philippines. Unfortunately, we argue that EO 23 resulted in negative consequences for the wood industry, its different stakeholders, the forestry sector and the entire country.

Evidence from a study (Paqueo and Silfberberg, 2016) recently conducted to analyse the performance of the wood industry in the Caraga region or Region XIII covering the provinces of Agusan del Norte, Agusan del Sur, Surigao del Norte, and Surigao del Sur shows the actual and potential actual effects of EO 23. Using primary and secondary data, employing Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) to collect data and information, the findings of the study saw the following unintended consequences of EO 23.

Decline of wood processing enterprises (WPEs)

First, by enhancing conflicts between economic development and environmental protection, EO 23 favored the latter at the expense of the former. In doing so, the slow development of logging-dependent areas and the countryside was apparent. After the issuance of EO 23, the number of wood processing enterprises (WPEs) in Caraga drastically declined from 119 in 2010 to 27 at present (Table 1).

The most important reason for this decline was that the wood processing permits of many existing plants were not renewed due to non-compliance of the requirement that the plants have to have a five-year log supply stock. Critics have pointed out that the government is asking for a five-year supply of logs, when the license to operate is only for three years, with approval being temporary for the first year.

Another reason for the decline in the WPEs is that there are no more new WPEs at present as EO 23 has declared an indefinite moratorium against the approval of new wood processing permits (WPPs)³. As a consequence, the decrease in the number of WPEs during the implementation of the EO has led to halving the annual log requirement of the region from 1.17 million cubic meters to 557,000 cubic meters.

Table 1: Wood Processing Enterprises in Caraga Before and During EO 23

Type of WPE	Before EO 23	During EO 23
Integrated Wood Processing Plants (Veneer, plywood/blockboard, Mini-sawmill)	10	10
Veneer/Plywood Plant	9	0
Veneering with Mini-sawmill component	19	13
Sawmill Plant	7	0

³ Even if approval of new WPPs were allowed, the high cost, hassle and uncertainty of getting a permit along with other issues also discussed here would have most likely discouraged investors from applying for a license to operate.

Mini-sawmill	68	1
Re-sawmill	2	0
Match factory	1	1
Match splinting	1	1
Wood Treating Plant	1	0
Fiber Board Plant	1	1
Total	119	27

Source: DENR, 2015. *Status of Caraga Wood Industry*.

Increased rent-seeking

Second, over-regulation imposed by EO 23 incentivized rent seeking that led to corruption among government regulators and their associates. Bribes have been demanded to facilitate government authorizations of permits and other requirements.

For instance, although there are only three legitimate composite checkpoints in the region, the actual number of checkpoints when delivering to Butuan can reach up to 14 and up to 20 for delivery to Cagayan de Oro. This increase in checkpoints may have also increased the potential for “SOP” fees which presently could be as high as PHP 5,000 to PHP 6,000 for delivery to Butuan City alone.

Another form of illegitimate fees in the wood industry of Caraga at present is the overcharging of “overloading” fees at the weighbridges, which is done three times a year. The amount charged ranged from an excess of PHP 200 up to PHP 2,300 per truck of the PHP 500 penalty in the official receipt (i.e. payment of PHP 700 to PHP 2,800). Furthermore, there is the fee imposed by the Bureau of Internal Revenue (BIR) of PHP 22.50 per cubic meter of timber which the growers of planted species, such as *falcata*, are supposed to be already exempted from.

Increased costs of doing business

Third, stricter implementation result in significant direct and indirect economic costs from the producers down to the consumers at the end of the supply chain. These include transaction costs, administration costs, and enforcement costs for government, direct compliance costs, such as those related to proving the origin of timber, for producers; and indirect costs for consumers and downstream industries such as when compliance costs are passed on in the form of increased input and output prices.

Even before 2010, the wood industry in Caraga, and the Philippines for that matter, was already heavily burdened by a plethora of fees, taxes and related costs that make operating in the wood industry costly, unpleasant, and time-consuming. With the implementation of EO 23, the costs of doing business has become even higher ranging from 13 to 14 percent of the total cost of timber production and transport to wood processors (see Box below). These costs do not include the discouragement effect of the hassle and aggravation of dealing with rent-seekers and the monetary and opportunity cost of going around the bureaucracy and travelling to Manila for approvals. Income, property and other standard taxes are also not included as well as revolutionary taxes and “requests for ‘voluntary contributions’.”

Corollary to that, rural livelihoods of small-scale timber production are gravely affected as they were invariably unable to comply with the required paperwork to legally operate.

Box: How EO 23 is damaging Caraga's falcata industry and the social fabric

This is the story of Mang Ferdinand, manager of a plantation located in a poor barangay of one of the Surigao provinces. His name is fictitious for security reason, but the facts behind his story are true.

In the first decade of the 21st century, Mang Ferdinand planted thousands of falcata trees. Being a *segurista*, he registered them in the DENR immediately after plantation. After seven years of nurturing and protecting them, a portion of the planted trees was ready for harvest.

Before harvesting the trees, though, Mang Ferdinand had to request DENR to conduct an inventory of the number of trees in the plantation. For the inventory, Mang Ferdinand had to pay for the labor of the counters assigned by DENR. He had to pay PHP 660 per hectare for the inventory plus food and drinks. What should take half a day of work by one person was being done by three people in three days at a rate that was several multiples of the average wage of unskilled labor.

Mang Ferdinand was lucky to have gotten DENR to arrange for the plantation inventory and for it to be completed in a few weeks. A friend of his (also a falcata farmer) was not so lucky. It took DENR five months to respond to his request to harvest his trees.

With inventory done, Mang Ferdinand could now apply at CENRO for permit to transport the harvested logs, attaching the inventory to the Self-Monitoring Form (SMF). An approved SMF (a permit to transport) cost Mang Ferdinand PHP 2,700 per truck. The farmer got in return an official receipt of PHP 50 per truck (the official price). With this permit, the buyer of his logs could now deliver his truckloads of falcata timbers to a wood processing plant in Butuan City. Along the way, he had to make payments to the barangay where his farm is located and to two other barangays for passing through their road to reach the national highway. There, the logs had to be loaded to a 10-wheeler, which carried the timber to Butuan City.

Trucks carrying falcata logs are stopped and checked for illegal logs. These checkpoints have become platforms to extract grease money. Since the issuance of EO 23, there are more checkpoints and more rent-seekers, including members of the multi-agency task force organized to implement EO 23's log ban. Before, only DENR personnel had the authority to stop and inspect trucks carrying logs. It is now standard practice among log haulers and traders to budget for more grease money, euphemistically called SOPs. For delivery to Butuan City, the "SOP" payments at various checkpoints cost a total of about PHP 6,000 per truck. In comparison, the cost for SOPs from Tagbina, Surigao del Sur to Cagayan de Oro is about PHP 7,500 per truck.

All in all, Mang Ferdinand had to pay about PHP 3,760 per truckload of logs for SOPs at checkpoints. This expense plus the payment for the inventory and permit to transport amounted to about 10 to 15 percent of the price per cubic meter of falcata timbers delivered to the wood processing plant. This figure also includes the value of the time spent by him and his assistant complying with bureaucratic

requirements.

This amount could have been higher because of unjustified bureaucratic delays in the signing of the permit to transport. Many of the delays in approval are not innocent. They often occur to put pressure on the permit applicant to accede to illegitimate demands of the person in charge of approving permits. Mang Ferdinand knows of friends who were pressured and had to accept a “bloated” inventory estimate. Yes, bloating is a standard jargon among rent-seekers to refer to a common practice. Bloating provides legal cover for transporting illegally cut logs. This cover is sold for a hefty price (PHP 4,500/truck) to traders/haulers transporting those logs.

In light of the lucrative practice of providing legitimate cover for the transport of illegal logs, Mang Ferdinand wondered about the impact of EO 23. How can one possibly claim that the total log ban of EO 23 works, when for the right amount of money, the enforcers of the ban themselves provide the cover for the transport of the truly illegally cut logs!

Living conditions were also affected as large numbers of rural households squatting on lands that the government has classified as state-owned forestland or protected areas were affected by EO 23.

Reversion to open-access forestry

Lastly, EO 23 discouraged the practice of and investment in private tree planting as it may create the uncertainty that planters may not be able to harvest the trees they plant. Even if harvest is possible, planters are still unsure of the profitability and economic viability of tree planting given the increased economic costs and corruption involved.

The banning of selective logging under Integrated Forest Management Agreements (IFMAs) may have inadvertently shifted the management regimes of forest lands in Caraga from the more common integrated systems of in recent years present back to the common access mode of the past.

The Surigao Development Corporation (SUDECOR) experience, provides an exemplary case. Under new guidelines for the implementation of EO 23, SUDECOR was made to stop selective cutting of trees in its area of natural forest coverage. As a result, SUDECOR could no longer afford to sustain the maintenance, development, reforestation, and security operations. Ultimately, SUDECOR had to close down its operations. With the closure of SUDECOR and the lack of government monitoring and enforcement, the area has reverted to open access where many illegal loggers, kaingin farmers, and informal settlers abound.

IV. Conclusions

Years of rapid and indiscriminate logging of Philippine forests coupled with little reforestation has led to more frequent, widespread, and damaging natural disasters such as floods, landslides, and other environmental damages. With strong political will and noble intentions, President Benigno S. Aquino III issued EO 23 in 2011. This order sought to protect the country’s natural forests by imposing a total ban over logging activities and imposing stronger measures against illegal cutting.

Unfortunately, EO 23 has failed to achieve its avowed objective of stopping the cutting of trees in the natural growth and residual forests. It has also adversely impacted the timber and wood processing industry within a relatively short time of five years of implementation. If left unchecked, there can be more potential adverse effects in the years ahead. Clearly there is a need to re-design EO 23 and its implementation.

The fundamental reason for the failure and damaging impact of the executive order is due to its lack of realism. That is, the policymakers of EO 23 and its implementation rules underestimated the power of increased corruption that the order would unleash. As it turns out, they create lucrative opportunities and incentives for rent-seeking that are so powerful they end up defeating the avowed objective of the executive order. The Caraga case study of Paqueo and Silfverberg (2016) illustrates the above narrative.

Concretely, the policymakers of EO 23 planted the seeds of its own defeat by not paying adequate attention to the intensification of corrupt practices they were bound to unleash. The practices encouraged and enabled illegal loggers to cut trees in natural growth forests and to transport and sell them with impunity despite all the checkpoints. Meanwhile, the stricter control measures imposed after the issuance of EO 23 ironically penalized socially responsible commercial tree planters and private organizations practicing sustainable forest management. As a consequence, the cost of doing business in the entire wood industry value chain increased due to the following specific reasons.

First, EO 23 increased the number of agencies and persons assigned to implement stricter control measures. These along with the increased number of authorities involved led to the dramatic proliferation of checkpoints, each of which became platforms for extorting illegal fees from trucks carrying logs like falcata, bagras, gemilina and other planted species.

Second, EO 23 became a pretext to maintain and impose more and stricter permit or documentation requirements for the registration, inventory, cutting and hauling of logs grown by tree farms. Most of those requirements, which are unnecessary or have little social value, have created more opportunities for lucrative rent-seeking.

Third, as the direct result of EO 23, the issuance of new wood processing permits has stopped; and the renewal of WPPs of existing firms has become stricter, increasing side payments by wood processing investors and reducing expected long run demand for locally planted timbers. On this score, the number of wood processing firms tumbled precipitously. All these taken together have clearly weakened the social fabric of Caraga. Equally important, they are impeding the generation of jobs and incomes badly needed by the people of the region.

V. Reflections

So, what can be done as an alternative? This is not the place to have an elaborate discussion of the various options. We, therefore, limit our remaining discussion to outlining an example of an alternative strategy. This example has been proposed and detailed in Paqueo and Silfverberg (2016) for the Caraga region. To be clear, the applicability of the proposal to other localities would need to be validated.

The heart of the proposal is the recognition that a more holistic but realistic approach is needed for a sustainable, effective and economically sensible alternative strategy – one that would be a win-win for both conservation of natural growth forests and generation of jobs and income. In Caraga, the strategy would consist concretely of the following components: (i) the development and implementation of cost-effective control of illegal logging; (ii) faster and sustained expansion in the number and quality of industrial trees planted; and (iii) re-tooling and modernization of wood processing plants. Concrete examples of specific measures under each component are given in Annex xxx.

This holistic strategy would have the following notable advantages. The first component would make control of illegal logging more effective and would reduce the cost to tree planters, timber haulers and wood processing firms. A key idea in this component is to focus resources on on-site inspection activities at two sites only: at the forests to be protected and at the wood processing plants. Inspection at highway checkpoints for illegal logs would be prohibited. In Caraga, this approach would be practical because more than 95 percent of logs transported and processed are planted species, which can easily be identified at those two sites. The second proposed measure would do away with registration, inventory and permit requirements for harvesting and transporting trees planted by farmers. Those requirements serve very little purpose except as occasions for rent extraction.

Third, greater availability of commercial trees would provide ample supply of logs for more wood processing plants. This increase in market supply along with more effective control of illegal logging through on-site inspection would reduce the need for enterprises and log suppliers to resort to timbers cut in naturally grown forests. Fourth, the proposed strategy would support the re-vitalization of the wood processing industry by expanding available commercial trees as well as liberalizing the entry of firms and moving the responsibility of regulating the wood processing industry to the Department of Industry (DTI). DENR control of the number of wood processing permits is misguided. It is based on the outdated idea that the number of firms allowed in an industry should be limited by the supply of locally available raw materials despite their availability in the international market. This view is akin to saying that the number of bakeries in the Philippines should be limited to the supply of locally produced wheat. Clearly, such policy would be welfare reducing.

Finally, we want to emphasize that coalition building based on informed ideas and enlightened self-interest is an essential ingredient to successful and sustainable development agenda. The proposed strategy would provide a valuable platform for

forging a consensus among stakeholders on a strategy for dealing with environmental and economic issues. On this point, an important lesson from the Caraga EO 23 experience is that there was no buy-in from affected stakeholders. This lack of support and the failure of the National Government officials to listen to their views is one of the causes for the environment protection failure of EO 23 and for its damaging (unintended) social and economic consequences.

References

- Carandang, A. P. 2008. The Forestry Sector: Costs of Environmental Damage and Net Benefits of Forestry Interventions. A Contribution to the Philippines Country Environmental Analysis, Submitted to the World Bank, 49 p. At <http://siteresources.worldbank.org/INTPHILIPPINES/Resources/WBCEATheForestrySectorCarandang.pdf> (Accessed on February 28, 2016)
- Carandang, A. P. et al. 2013. Analysis of Key Drivers of Deforestation and Forest Degradation in the Philippines. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, 110 p. At <https://www.giz.de/en/downloads/giz2013-en-key-drivers-deforestation-forest-degradation-philippines.pdf> (Accessed on February 28, 2016)
- Durst, P. B., T. R. Waggener, T. Enters and T. L. Cheng. 2001. Forests out of Bounds: Impacts and Effectiveness of Logging Bans in Natural Forests in Asia-Pacific. Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok, Thailand. At http://coin.fao.org/coin-static/cms/media/9/13171037773780/2001_08_high.pdf (Accessed on February 29, 2016)
- Israel, D. C. 2015. Nongovernment Reforestation in the Philippines: Review, Analysis, and Ways forward, PIDS Discussion Paper No. 2015-49, Philippine Institute for Development Studies, NEDA sa Makati Bldg., Makati, Metro Manila, 39 p.
- Paqueo, V. B. and D. Silfberberg. 2016. A Jobs Value Chain and Policy Analysis of Caraga's Wood Industry: Towards a Revitalization Agenda. Final Report submitted to the World Bank-Philippines for its Mindanao Jobs Report, 66 p.
- Philippine Daily Inquirer. 2012. EO 23 Stops Legitimate Logging, Favors Instead Illegal Logging. At <http://opinion.inquirer.net/32033/eo-23-stops-legitimate-logging-favors-instead-illegal-logging> (Accessed on February 29, 2016)
- SEPO. 2013. Natural Disasters at a Glance. At https://www.senate.gov.ph/publications/AAG%202013-04%20-%20Natural%20Disasters_final.pdf (Accessed on March 4, 2016)
- Tejaswi, G. 2007. Manual on Deforestation, Degradation, and Fragmentation Using Remote Sensing and GIS. MAR-SFM Working Paper 5, Forestry Department, Food

and Agriculture Organization of the United Nations, Rome, 49 p. At <http://www.fao.org/forestry/18222-045c26b711a976bb9d0d17386ee8f0e37.pdf> (Accessed on February 28, 2016)