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DENR Administrative Order
No. 2023- 09

SUBJECT : GUIDELINES IN THE CONDUCT OF INVENTORY AND ASSESSMENT OF GRADUATED NATIONAL GREENING PROGRAM (NGP) PLANTATIONS BY THIRD-PARTY EVALUATORS

Pursuant to Executive Order (E.O.) No. 192, Series of 1987 or the "Reorganization Act of the DENR", Presidential Decree No. 705, as amended, otherwise known as the "Revised Forestry Code of the Philippines", Executive Order (E.O.) No. 26, Series of 2011, entitled "Declaring an Interdepartmental Convergence Initiative for the National Greening Program," E.O. No. 193, Series of 2015, entitled, "Expanding the Coverage of the National Greening Program"; and Republic Act No. 9184 otherwise known as the Government Procurement Reform Act, the guidelines governing the conduct of inventory and assessment of Graduated National Greening Program (NGP) Plantations by a third-party evaluator are as follows:

SECTION 1. Basic Policy. It is the policy of the State to protect and advance a balanced and healthy ecology in accordance with the rhythm and harmony of nature.

SECTION 2. Scope. This Order shall cover the conduct of inventory and assessment of graduated NGP plantation sites funded under the General Appropriations Act, that were reported to have been physically completed.

SECTION 3. Objectives. The general objective of this Order is to determine the performance of NGP. Specifically, to:

- 3.1. determine the current stocking density under NGP graduated plantations as well as existing trees, saplings, and at least 1-meter regenerants;
- 3.2. identify the initial impact on the socio-economic condition of People's Organization (POs); their perception of the effect of NGP on their environment; their impression of the implementation of NGP; and
- 3.3. draw lessons, identify gaps, and recommendations for policy enhancement and improved implementation strategies.

SECTION 4. Definition of Terms. For purposes of this Order, the following terms are to be understood and interpreted as follows:

- 4.1. Graduated NGP Plantations - refers to at least three (3) years old project sites established, and physically completed under the NGP and ENGP as reported by the DENR field offices;
- 4.2. Third-Party Evaluator - any juridical person, which in the context and scope of this Order includes, corporations, consultancy firms, associations, and State Universities and Colleges with technical capability and engaged in environment or forestry advocacy, as registered in any appropriate government institutions; and
- 4.3. Key Informant - stakeholders that are in situ and direct beneficiaries of NGP.

SECTION 5. Qualifications of Third-Party Evaluators. Qualified third-party evaluators shall include, but not limited to, associations, corporations, consulting firms, non-government organizations, or civil society organizations with technical capabilities and engagement in environment or forestry advocacy, as well as State and Private Universities and Colleges. Provided that, partners/contractors/organizations shall only be allowed to act as third-party evaluators of sites that they did not establish. Interested third-party evaluators must possess the minimum requirements set forth by Republic Act (RA) No. 9184 in rendering the services needed, including expertise in forest inventory, project evaluation and assessment, socio-economic evaluation, and Geographic Information System (GIS).

Aside from the minimum requirements set forth under RA No. 9184 for procurement of services, the third-party evaluator must meet the minimum qualifications as provided in the Terms of Reference (TOR) to be formulated by Forest Management Bureau (FMB). Moreover, the third-party evaluators must have the expertise and/or have undertaken similar projects related to the following for the past ten (10) years:

- 5.1. Project implementation, management, and supervision of ENR projects;
- 5.2. Forest inventory, surveys, and/or assessment of reforestation/afforestation sites, including GIS operations; and
- 5.3. Socio-economic surveys and impact assessment studies of community-based management programs.

The Third-party has no record of past contract engagements with DENR that were not completed and outputs not delivered.

SECTION 6. Responsibilities of the third-party evaluator. The following activities shall be conducted by the third-party evaluators:

6.1. Conduct of field inventory and assessment of graduated NGP Plantations

- 6.1.1. Carry out the inventory and fill out the necessary information (diameter, height among others) using the data capture and observation forms.

- 6.1.2. Take geotagged photos and submit photo layouts for each site assessed. Include the geotagged photo layout as part of the summary results.
- 6.1.3. Integrate, manage, organize, and submit data of all sample plots of the sites inventoried in accordance with the TOR.
- 6.1.4. Submit final assessment report in accordance with the TOR.

6.2. Conduct of Key Informant Interview (KII). The key informant interview shall be conducted for *in situ* contractors or partners that are directly benefiting and has the immediate stake in the NGP areas following the prescribed template to be developed by FMB.

A specific procedure for the conduct of the activities in this section can be referred to in Annex A.

SECTION 7. Mode of Engagement. The DENR through its Regional Offices shall engage third-party evaluators pursuant to Republic Act No. 9184. The Regional Offices may delegate the procurement of third-party evaluators to the Provincial Environment and Natural Resources Offices (PENROs) pursuant to the provisions of the Manual of Authorities on Administrative Matters (DAO No. 2014-03). A template for the contract and the terms of reference (TOR) for the procurement process shall be provided by the FMB.

The third-party evaluator shall conduct field inventory of sample sites, conduct key-informant interviews and gather key lessons related to the graduated NGP plantations.

SECTION 8. Participation and Support of DENR in the conduct of the third-party evaluation. The participation and support assistance to be extended by DENR personnel shall be limited to:

- 8.1. Provision of guidance and assistance on the provision of documents, available digital NGP data, and shapefiles related to the said activity;
- 8.2. Pre-identification of PO respondents and coordination for the conduct of the KII;
- 8.3. Random monitoring of activities of the third-party evaluators;
- 8.4. Conduct drone shoots for the sample sites and plots and generate the corresponding map. These generated drone-surveyed maps shall be used for comparison with the satellite images for analysis being conducted by the DENR Geospatial Database Office (GDO); and
- 8.5. Conduct orientation or levelling-off workshop for the third-party evaluators on the procedure and reporting requirements.

However, no personnel of the Department, whether permanent or contract of service, shall participate in the actual activities as third-party evaluators.

SECTION 9. Funding and Contract Cost. The cost for the conduct of the activity shall be recommended by the Director of FMB and approved by the Supervising Undersecretary and shall be included in the Work and Financial Plan. It shall cover all activities provided for in Section 6 of this Order including incidental expenses.

SECTION 10. Monitoring, Evaluation, Reporting, Supervision and Acceptance. The activity shall be monitored and supervised by the DENR and its concerned Offices. Consolidated monthly progress reports, maps of drone-surveyed sites with plots, as well as final reports shall be submitted to the Office of the Undersecretary for Policy, Planning and International Affairs (OUPPIA), copy furnished the FMB, DENR-GDO, and the Financial and Management Service (FMS). Subsequently, the FMB shall furnish a copy of the submitted final reports to Ecosystems Research and Development Bureau (ERDB), Biodiversity Management Bureau (BMB), and the Policy and Planning Service (PPS).

The final reports of the third-party evaluators as accepted by the authorized official shall be used as basis of the Accountant in the updating and reclassifying the records in the book of accounts from Construction-In-Progress - Land Improvements (CIP-LI) to Land Improvements - Reforestation Projects (LI-RP)."

10.1. DENR Field Offices. The following shall be the roles of the DENR Offices in relation to the third-party evaluation:

10.1.1. DENR Regional Offices. The DENR Regional Offices shall monitor the progress of activity and consolidate the monthly progress reports. The REDs shall create a Regional Review Committee (RRC) to review the deliverables and/or final report of the third-party evaluators.

The Review Committee shall be chaired by the Assistant Regional Director (ARD) for Management Service, vice-chaired by the ARD for Technical Services, and its members shall be composed of the Chiefs, or their duly designated representatives, of the Conservation Development Division (CDD), Planning and Management Division (PMD), Accounting Division, and the Regional NGP Focal/Coordinator. Provincial Sub-committees shall also be created for each province, which shall be composed of the PENRO NGP Focal/Coordinator, PENRO Planning Officer and PENRO Accountant (or their duly designated representatives), and the CENRO NGP Focal/Coordinator within each PENRO's jurisdiction along with one technical staff. Protected Area Superintendent (PASu) may also be included as a member of the Provincial Subcommittee for provinces that implemented NGP in protected areas (PA). The Provincial Sub-committees shall be part of the Regional Review Committee.

10.1.1.a. Roles of the Regional Review Committee

- i. Provide technical and overall guidance to the field offices;

- ii. In coordination with the field offices, monitor the progress of execution of activities of the Third-Party as well as the parallel support activities of the Region and field offices;
- iii. Designate one of the RRC members from the Regional Office to be the head of Provincial Subcommittee;
- iv. May delegate the review of the first and second deliverables to the concerned Provincial Subcommittee;
- v. Review the final report of the Third Party to be endorsed to the Regional Executive Director (RED) or PENRO, whichever is applicable; and
- vi. Endorse and recommend for payment the reviewed final report (for the last billing) to the RED or PENRO.

10.1.1.b. Regional NGP Office/Unit/Operation Center

- i. Conduct levelling-off and orientation workshop with the Third-party evaluator for those contracted by the Region;
- ii. Provide the accomplishment, contract database and shapefiles from the PENROs and CENROs that will be subjected to inventory;
- iii. Consolidate and prepare the monthly progress report;
- iv. Consolidate the deliverables and reports of the Third Party, drone-survey shots and maps of the PENROs/CENROs, and come-up with a draft regional consolidated report;
- v. Consolidate the final report of the Third Party Evaluator and keep the hard-copy and digital copies;
- vi. Create a google drive to store the digital copies of the deliverable and reports to be shared or can be accessed by FMB NGPCO and other oversight/concerned offices;
- vii. Conduct prior review of the deliverables and reports that were contracted by Regional Office;
- viii. Facilitate the provision/generation of NGP data/reports with the PENRO and CENROs to be used by the Third Party;
- ix. Arrange the venue, logistics and do the preparations for the meetings of the Regional Committee;
- x. Serve as Secretariat during the meetings and workshop to be conducted with the Regional Assessment Committee; and
- xi. Draft Special Order for the Creation of the Committee.

10.1.1.c. Regional Finance Division

- i. Review and consolidate the regional report of the result of the updating and reclassification of the status of the records of the inventoried NGP graduated sites;
- ii. Submit the consolidated regional status of the updated and reclassified records of the NGP Graduated sites from the book of accounts; and
- iii. Prepare and submit the list and status of NGP graduated sites endorsed for recognition of impairment loss as well as the list of

same subjected to derecognition due to force majeure to the DENR Financial and Management Service (FMS).

10.1.2. PENR and CENR Offices

10.1.2.a. PENRO Technical Service Division (TSD) and CENRO Technical Service Section (TSS)

- i. Conduct a leveling-off and orientation workshop with the Third-party evaluator for those contracted by the PENRO;
- ii. Provide the accomplishments, contract database, and shapefiles that will be subjected to inventory;
- iii. Take drone shots on the sample sites and plots, and come up with drone-surveyed maps which includes the geotagged photos and google map snaps to be included in the individual contract report;
- iv. Pre-identification of PO respondents and coordination for the conduct of the KII;
- v. Keep the hard-copy and digital copies of the deliverables and reports of the Third Party Evaluator;
- vi. Jointly, with the Provincial Subcommittee, conduct review of the deliverables and reports of the Third Party Evaluator for those contracted by the PENRO;
- vii. Pre-identify the in-situ POs to be shared to the Third Party Evaluator;
- viii. Supervise the progress and randomly monitor or observe the conduct inventory and interviews with the POs of the Third Party Evaluator within their jurisdiction regardless of the procuring/contracting entity and shall ensure that all graduated sites to be subjected to the site inventory and assessment are covered by the third-party evaluators;
- ix. Prepare the monthly progress reports; and
- x. Do the preparations and provide administrative and logistical support in the conduct of meetings.

10.1.2.b. PENRO Administrative and Finance Section

- i. Review the list and result of the site inventory and check if such are recorded in the book of accounts;
- ii. Reclassify and update the status of the sites in the book of accounts from Construction-in-Progress – Land Improvements (CIP-LI) to Land Improvement – Reforestation Projects (LI-RP);
- iii. Based on records, identify sites that has been endorsed for recognition of impairment loss as well as those endorsed for derecognition process; and
- iv. Submit provincial consolidated report of the result of the updating of the records of the inventoried NGP graduated sites to the Regional Finance Division.

10.2. DENR Central Office and Bureaus

10.2.1. DENR Policy and Planning Service (PPS), Biodiversity Management Bureau (BMB), Ecosystems Research and Development Bureau (ERDB), and DENR Geospatial Database Office (GDO)

- a. Do a parallel review on the submitted deliverables and final reports to be endorsed to FMB while maps will be reviewed by the GDO for the purposes stated in Section 8.4;
- b. Jointly with FMB, provide technical guidance in the review of deliverables and reports to the Field Offices;
- c. Participate in the meeting and workshops to be arranged or called by FMB and DENR Central Office; and
- d. Participate in the spot monitoring and review of FMB in the region or field offices.

10.2.2. Forest Management Bureau (FMB)

- a. Conduct blended National orientation/leveling-off Workshop and meetings with the DENR Regions and Field Offices;
- b. Provide technical guidance to the RRC in the methodology and review of reports;
- c. Attend to immediate queries of the DENR Field Offices;
- d. Conduct spot review of the deliverables and reports endorsed by the Region and may participate in the review of outputs of the third-party during the review meeting of the RRC as a form of guidance to the field offices;
- e. Monitor the progress of activity through the Regional Offices; and
- f. Consolidate the final reports as endorsed by the Region and come-up with a National Consolidated Report.

10.2.3. Financial and Management Service (FMS)

- a. Review and analyze the list and result of the site inventory and assessment to be submitted by the Regional Finance Division;
- b. Consolidate the national status of recording of NGP Graduated Sites to the book of Accounts; and
- c. Provide feedback to the Commission on Audit (COA) regarding the status of the record to the book of accounts and status of those subjected to recognition of impairment loss and derecognition due to force majeure.

10.3. Review and Acceptance of Deliverables and Final Report.

The RRC shall review the final report of the Third-Party Evaluators. If found in order, the Committee Chair shall endorse the same to the contracting party for acceptance, see Annex B.

If the contracting party is the Regional Office, the RED shall issue the acceptance certificate for the payment of billing upon endorsement by the RRC. If the contracting party is the PENRO, the PENR Officer shall issue the certificate for the payment upon the endorsement of the concerned provincial sub-committees.

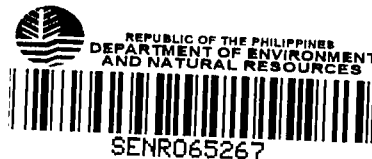
The DENR Regional Offices shall consolidate and endorse all accepted final reports to the Office of the Undersecretary for Policy, Planning, and International Affairs copy furnished the FMB for consolidation of the national result of the activity.

SECTION 11. Separability Clause. If any provision of Order shall be held invalid or unconstitutional, the other portions or provisions hereof which are not affected shall continue in full force and effect.

SECTION 12. Repealing Clause. All Orders and other similar issuances inconsistent herewith are hereby revoked, amended, or modified accordingly.

SECTION 13. Effectivity Clause. This Order shall take effect fifteen (15) days after its publication in a newspaper of general circulation and upon acknowledgment of the receipt of the copy thereof by the Office of the National Administrative Register (ONAR).


MARIA ANTONIA YULO LOYZAGA
Secretary



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September 21, 2023

Acknowledgement: ONAR, U.P. Law Center
September 22, 2023

ANNEX A: Specific Procedure for the Conduct of Sampling, Inventory and Key Informant Interview

ANNEX B. Process Flow of Procurement, Output Review and Acceptance

ANNEX A

Specific Procedure for Sampling, Inventory, and Key Informant Interview

The issuance of Executive Order (EO) No. 26 in 2011 mandated the Department of Environment and Natural Resources (DENR) to spearhead the implementation of the National Greening Program (NGP) in partnership with other national government agencies, academe, civil society organizations, and other stakeholders. The NGP aims to contribute to addressing national concerns about *poverty reduction, food security, environmental stability, biodiversity conservation, and climate change mitigation and adaptation.*

The program targeted the rehabilitation of 1.5 million hectares of degraded forest lands from 2011 to 2016. By the end of 2016, a total of 1.6 million hectares had been planted. This prompted the government to issue EO No. 193 expanding the coverage of the NGP to cover all remaining unproductive, denuded, and degraded forests, with its period of implementation also extended from CY 2016 to CY 2028.

Through the years, the Program has established these sites through partnerships with different stakeholders including Local Government Units (LGUs), other government agencies, the academe, different People's Organizations (POs), families, and the private sector. However, aside from ensuring the production of planting materials, establishing sites, and maintenance and protection activities, the DENR is also responsible for the proper recording of these project sites in the Book of Accounts as the Program is funded by the government and the Filipino people, and the sites are considered as government assets.

It has been made known through several correspondences and coordination meetings between the DENR Central and Field Offices, and the Forest Management Bureau (FMB) that some of our field offices are having difficulties in properly recording the project sites in the Book of Accounts, from Construction in Progress (CIP) to Land Improvements (LI). There also have been issues on the requests for recognition of impairment loss, derecognition, delisting, and filing of relief of accountability in relation to the project sites damaged by force majeure (e.g., typhoons, landslides, etc.).

In line with this, the Department crafted this manual in order to provide the standard procedures on the inventory, assessment, and reconciliation of records of graduated NGP plantations which shall be used by the third-party evaluators that will be engaged by the DENR Regional or PENR Offices.

[REDACTED]

The general objective in conducting this activity is to determine the initial impact of NGP. Specifically to:

1. determine the current stocking density under NGP graduated plantations as well as existing trees, saplings, and at least 1-meter high regenerants;
2. identify the initial impact on the socio-economic condition of the POs; their perception of the effect of NGP on their environment; their impression of the implementation of NGP; and
3. draw lessons, identify gaps, and recommendations for policy enhancement and improved implementation strategies.

[REDACTED]

This manual shall cover the conduct of inventory and assessment of graduated NGP plantation sites funded under the General Appropriations Act, that were reported to have been physically completed.

[REDACTED]

In general, below are the materials, equipment, and tools needed for the conduct of the activities stipulated in this Manual:

1. GPS
2. Drone
3. Smartphone
4. Android Geocam
5. Diameter tape
6. Meter Tape
7. Haga Altimeter, Rangefinder or Five-meter Pole with 1-meter mark
8. Pencil/Pen
9. Clipboard or writing surface for the Inventory (Using the Data Capture Form)
10. Interview Forms/Questionnaire
11. Data Capture and Observation Form
12. Computer/Laptop
13. GIS Software
14. Database by year and shapefiles of graduated NGP plantations or any other applicable reforestation plantations/projects

In addition, for the safety of the users of this Manual, the following are also encouraged:

1. First Aid Kit
2. Head lamp
3. Camping Tent
4. Outdoor Sleeping Bag
5. Raincoat

Additional tools and equipment may be needed depending on the conditions or situations in the site.

Listed below are the general methodology and expected output per major activities/module. Specific objectives, detailed methodology, and parameters of analysis vis-à-vis expected output area shall be provided per area of assessment/module.

Table 1. General Methodology

| AREA OF ASSESSMENT | GENERAL METHODOLOGY | EXPECTED OUTPUT/DELIVERABLE |
|--|--|--|
| 1. Inventory of Physical status of areas planted and condition of the site | <ul style="list-style-type: none"> • Inventory of sample plot/s • Field observation during the physical/ground inventory using data capture forms • Documentation of the plots inventoried by taking geotagged photos | <ul style="list-style-type: none"> • Pencil-filled-out data captured (hard copy) • Print-copy and digital copy in MS word file of individual results of the inventoried contracted area out the inventoried sampled plot/s containing the data analysis tables, sample geotagged photos, google map of the sites and drone shots/pictures as per prescribed format; • Shapefile of the validated sites and plots established • Digital copy of geotagged photos, all encoded and analyzed data, including scanned copies of filled-up data capture |

| AREA OF ASSESSMENT | GENERAL METHODOLOGY | EXPECTED OUTPUT/DELIVERABLE |
|----------------------------|---|---|
| | | forms, results on the contracted area out of the inventoried the sampled plots in MS Word files, and KII encoded data in MS Excel. |
| 2. Key Informant Interview | <ul style="list-style-type: none"> ● Interview with the key PO Chair and its members | <ul style="list-style-type: none"> ● Pencil filled-up KII results (hard copy) ● Encoded data of key informant interview of <i>in-situ</i> POs and local beneficiaries ● Perceived initial outcome of socio-economic and natural/environmental capital out of NGP Implementation, lessons etc |



PLANTATION/FOREST DEVELOPMENT INVENTORY AND ASSESSMENT

The conduct of a field inventory and assessment of graduated NGP plantations aims to determine the current stocking of the planted sites and to identify other sites that have already been damaged by natural and other occurrences and therefore can be considered to be delisted or derecognized.

A. SAMPLE SIZE DETERMINATION

Based on contract, all graduated NGP plantations shall be validated through the conduct of inventory.

For contracted areas less than 1 ha, 100% inventory shall be undertaken. For example, if the contracted area to be inventoried is 0.89 hectares, then the sampling size shall also be equal to 0.89 hectares.

For contracted areas equal to or greater than 1 ha to represent the whole area contracted, the number of sample plots for these areas can be computed using the formula below:

$$\text{Number of sample plots} = 1 + ((0.10) \times (a-1))$$

Where: **1** ha being the minimum area to be validated
0.10 or the (10%) of the area upon deducting 1 ha
a is the NGP contracted area

If the contracted area is 80 hectares, which falls within the range of 1 hectare and above, the number of sample plots is equivalent to nine (9) 1-hectare plots and so on. The assigning of sample size shall be done using MS Excel. The result should be rounded off to get a whole number.

Example: Contracted area is 80 ha

$$\begin{aligned} \text{Number of sample plots} &= 1 + ((0.10) \times (80 - 1)) \quad (\text{in excel: } =\text{ROUND}(1+((0.10)\times(\text{area contracted}-1))) \\ &= 9 \text{ sample plots (each plot has 1-ha sample area/size)} \end{aligned}$$

After the determination of the number of sample plots, the team shall employ a random sampling of plots. The area/size of each sample plot is **100m x 100m or 1 ha**. Random plots shall be determined using the Grid Index feature and Random Point Selection of GIS software. For reference, an image is shown below showing the Grid Index and Random Point Selection features of GIS software.

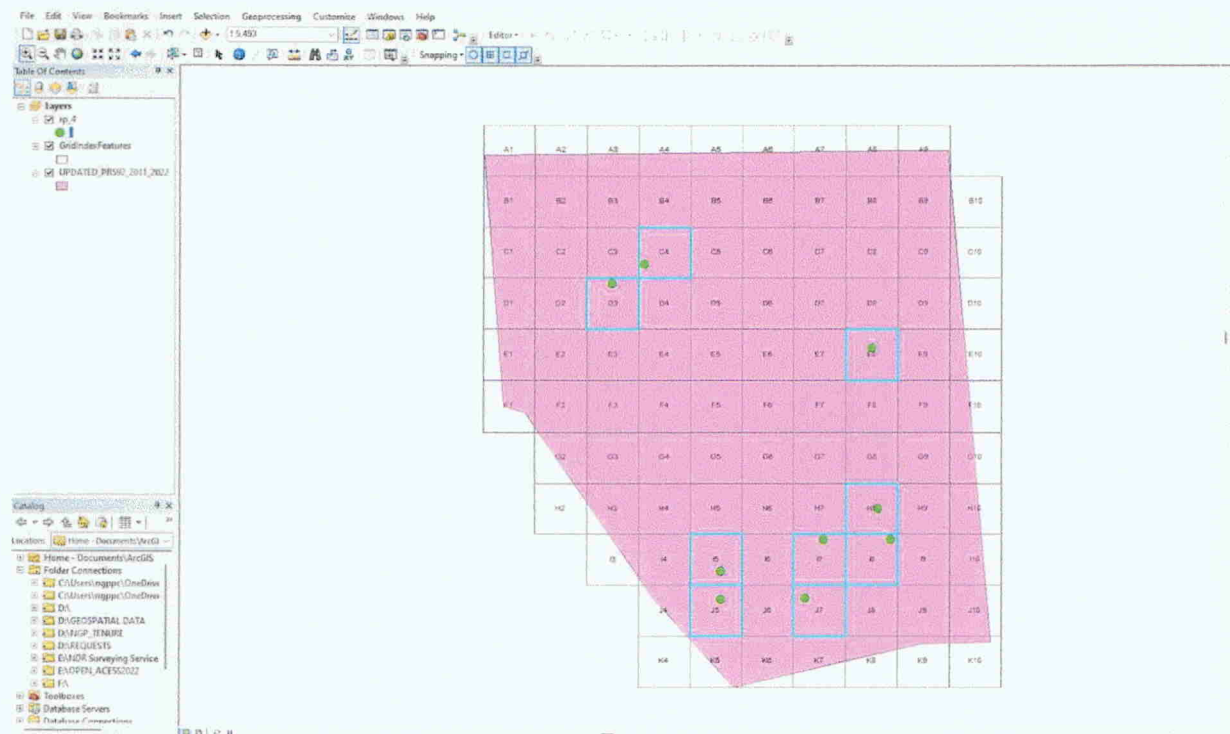


Figure 1. Grid Index and Random Point Selection features

For contracts having more than one (1) site/polygon established, all sites/polygons shall be clustered and merged so that all will be included in the random plot selection.

Should the randomly selected plot fall under boundaries, bodies of water, ravines etc., the Third-party Evaluator shall select any plot adjacent to the said plot.

B. COORDINATION PRIOR TO THE INVENTORY

Proper coordination with the NGP partners depending on the nature of partnership (e.g., Academe, People's Organizations [POs], etc.), LGU/s concerned, and other applicable stakeholders shall be conducted by the team.

The team shall make known the objectives, activities, and schedule for this activity to the concerned stakeholders, as well as the team composition that shall be conducting the fieldwork.

C. PREPARATORY ACTIVITIES, ACTUAL FIELD INVENTORY, AND PHOTO DOCUMENTATION

DENR-led

1. Update the contract database, then add an additional column where the sample size of each contract will be computed using MS Excel.
2. Generate the dbf file or data attributes of the latest submitted NGP shapefile to be used in the initial site identification for sampling. In reference to the updated contract database, they shall determine which sites are covered by a single contract so that they are all taken into account when creating sampling plots.
3. From the contract database create a separate sheet and identify/prioritize those to be subjected for inventory given the total target sample size for the year by Province and CENROs.
4. Create a single Excel file containing each sheet for contracts database, yearly accomplishment (by PENRO) and a dbf file.
5. In the NGP ARC-GIS file, update the attributes by adding a contract code. The purpose of the contact code is to assign specific code or identity for those contracts having either one site or two/more sites, which will be used in the random selection. The contract code to be used is a concatenate of Year, CENRO PSG Code and a minimum of 3-digit numeral (e.g., 2011-012815000-001)

6. Provide to the Third Party the contract database and the shapefiles for them to determine and locate the plots to be sampled within the site or cluster of sites using the Grid Index Feature of ArcGIS.
7. Set a briefing and leveling-off meeting with the Third Party to discuss their activities and expected output/deliverables.
8. Simultaneously during the inventory, the DENR staff will do the drone shoot. When taking drone shots, the aerial photo of the site/polygon shall be the first to be focused followed by the subject plot. This will be taken both in stitch (at least 4 images) and still photo (at least 4 shots each for the site and plot). (Note: sample images which include the land-cover map and kmz of each site, drone shots and photos, will be integrated for comparison given the attached pro-forma as Appendix B).
9. The map from drone-surveyed areas shall be used for comparison with the satellite images for analysis being conducted by the Geospatial Database Office (GDO) of the DENR Central Office.

Third Party-led

10. Determine using the Random Point Selection feature of the GIS Software. Each plot should have an area of one (1) hectare. If and when the result of random plot selection is almost clustered, a second iteration of random sampling may be done in such a way that the result is somehow stratified or evenly distributed.
 - a. For Contracted areas with only 1 site/polygon, Random points based on the number of sample plots to be determined shall be drawn using the Random Plot Selection feature. Plot boundaries having 100m x 100 m area shall be drawn using the Grid Index Feature.
 - b. For Contracted areas with more than 1 site/polygon, the following shall be undertaken:
 - i. In the attribute table, select, extract and export all the sites established under 1 contract and create 1 shapefile for it.
 - ii. In order to generate random point location of the sample plots for 1 contracted area, all polygons should be merged using the "Merge" feature of the ArcMap editing tools.
 - iii. Once random point location of the sample plots are determined, grids may be created by using the Grid Index Feature of ArcMap to set the boundaries of the 1-ha square sample plot.
 - iv. In case the random point location falls to a 1-ha site/polygon, the boundaries of the polygon will serve as the guide line of the sample plot. In case it falls within an area of more than 1

hectare, the grids generated will serve as the boundaries of the sample plots.

- c. For plantations established along roadside and riverbanks, the determination of random plot location shall follow the process discussed earlier. However, since its polygons are almost linear, the 100m x 100 m sample plot cannot be used. In this case, sample plot can be irregular-shaped but should still equal 1 ha or 10,000 m². The boundary of sampling plots for this case can be generated through the Parcel Editor tool of ArcMap.
- d. For the **mangrove areas** planted, given the relatively high stocking density as distinguished from other components, **five (5) 10 x 10 meter quadrants** for each randomly selected plots will be set-up as sample areas. The quadrants should be distributed in the corners of the plots and one in the middle of the plot as illustrated below:

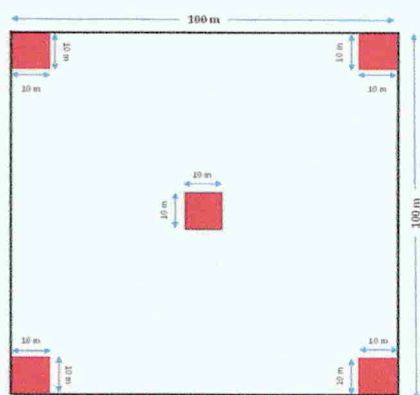


Figure 2. Distribution of quadrants within the 1-ha sampling plot of mangrove plantation

11. Save the map as a .kmz/kml file and load the file to the GPS or smartphone in order to easily locate the random plots. For mangrove reforestation component, be guided by the earlier mentioned procedure in setting the quadrants per plot.
12. Upload the generated shapefiles of the sample 100 x 100 M size plot/s in the GPS.
13. Initially prepare the jpeg maps generated per site to be copied and pasted to Individual Contract Report (attached as Annex B).
14. Fill up the initial data under desk input data (to be drawn from the existing database) in the capture form/s to be used for the day/week.
15. Print as many capture forms as pre-filled up with initial data and observation forms that will be used for the targeted sample plots to be inventoried for the week or month. As a

suggestion, a printer or and sufficient A4/legal size paper be brought by the Third Party's inventory at their barangay station.

16. Create a file folder and save an individual Excel file of the capture forms for each Contract.
17. Ready the GPS, Smartphone with Android Geocam, Diameter tape, Meter Tape, Haga Altimeter, Rangefinder or Five-meter Pole with 1-meter mark, Pencil, clipboard (where the capture forms will be mounted), straw in setting the boundary
18. Locate the plot to be inventory in the selected sites and conduct the inventory.
19. Upon arrival at the sampling plot, a 100-m transect line for those 1-hectare plot/s shall be established. Another 100-m transect line shall be established perpendicular to the first transect line. This shall enable the team to set-up a 100m x 100m square sampling plot. The use of a straw to establish the precise boundary of the plot, especially for those 1-hectare plots is suggested.
20. Carry out the inventory and fill-up/record the required data using the data capture form and thereafter the observation forms. All seedlings planted as well as those existing trees, saplings having a minimum diameter of 5 cm and regenerants with at least 1 meter height with its merchantable and total height, and DBH, among others, health status shall be recorded. Planted seedlings which are presumably grown as trees that are already decaying that have low chances to survive shall be excluded from the inventory (as we are after the number of trees survived). However, these decaying and infested trees should be noted in the observation form.
21. As a means of verification, take at least two (2) panoramic and 10 geotagged photos in each of the sample plots. The geotagged photos to be taken should represent the description or observation of the subject species and site. For example, if the intent is to describe the height of the trees, photos to be taken and used should show its full height with a height measurer holding the five(5) meter pole. Aside from the photos of the seedlings, the general condition of the area shall also be documented using the said photos.

D. CONDUCT OF KEY INFORMANT INTERVIEWS) AND ONE-TIME FOCUS GROUP DISCUSSION (by the Third Party)

1. The team shall conduct key informant interview of at least three (3) *in-situ* members among the POs/barangay or local beneficiaries/organizations/institutions identified, subject to the availability of such interviewees; The Team may be accompanied by DENR staff and act as observer or resource person.

2. Interview details shall be used in validating documents and in providing feedback on the implementation and the gains of the Organization from the Program.
3. After the conduct of the KII with the PO members, input the data collected in an excel sheet, process the data and prepare the initial results.
4. After preparing the initial results, the Third in coordination with DENR shall facilitate the conduct of one-time and blended focus group discussion to validate and substantiate the initial results before the report will be finalized.

E. DESK INPUTTING OF DATA CAPTURED, UPDATING OF MAP DATA ATTRIBUTES AND CONSOLIDATION OF RESULTS

1. After the conduct of inventory work and KIIs, the third-party evaluator shall input the obtained data/information to the corresponding "encoding sheet" (excel file) for each plot and summary sheet
2. In the encoding of data, the DENR and Third Party staff may sit down jointly, to properly encode and generate the expected data and data analysis and consolidation. DENR shall specifically review the data inputted so as to reduce erroneous submission of results (refer to the Annex on the Inventory and Data Analysis Framework).
3. For the volume computation, be guided with the regional volume factor for Dipterocarp and Non-dipterocarp species.
4. The third-party evaluator must enter the properly completed inventory (data captured) from the plots inventoried and input the summary results by polygon into the excel-based file.

F. DATA ANALYSIS AND REPORT GENERATION

1. Results of the inventory work and data review shall be inputted in the data capture forms.
2. Using the data capture forms, a summary of expected harvestable volume of trees planted for production, and volume of harvest from fruit-based or high value crops shall be determined.
3. Prepare and generate a digital copy in MS word file and print-copy and of individual results of the inventoried contracted area out the inventoried sampled plot/s containing the data analysis tables, sample geotagged photos, google map of the sites and drone shots/pictures and general observations as per prescribed format
4. Prepare the summary of results per contract and consolidate all the results given the prescribed format

VIII. EXPECTED OUTPUT

1. Geotagged photos
2. Updated maps, if necessary
3. Data on stocking density (number of trees, saplings and 1-meter regenerants both planted and existing)
4. General observations as per prescribed format such as but not limited to other floral species, replanting activities, if any, incidence of pest and disease harvesting conducted and recommendations.
5. Individual results of assessed contracted areas vis-a-vis sites
6. Summary and consolidated results of the inventoried contracts in MS Excel as per prescribed format
7. Monthly Progress Report

IX. REPORTING

The third-party evaluators shall provide monthly updates on the list and number of sites assessed and inventoried as per prescribed format for the DENR tracking of progress of activities until the completion of the 2nd deliverable. The third-party evaluator shall submit a completion report to the DENR to include but not limited to shapefiles, encoded data in the capture form, and individual results of contracted areas out of the inventoried sample plots as provided for in the contract.

Appendix A. SAMPLE OUTLINE REPORT

REPORT ON THE INVENTORY AND ASSESSMENT OF GRADUATED NATIONAL GREENING PROGRAM (NGP) PLANTATIONS

Region/PENRO _____

(Date)

I. INTRODUCTION

II. OBJECTIVES

1. determine the current stocking density under NGP graduated plantations as well as existing trees, saplings, and at least 1-meter regenerants;
2. identify the initial impact on the socio-economic condition of the POs; their perception of the effect of NGP on their environment; their impression of the implementation of NGP; and
3. draw lessons, identify gaps, and recommendations for policy enhancement and improved implementation strategies

III. METHODOLOGY

Dates of fieldwork conducted

Team composition

Coordinations made

Sampling inventory

Key informant Interview

IV. RESULTS AND DISCUSSION

(Provide the list of sites and corresponding sampling area as Annex.)

1. INVENTORY OF STANDING TREES AND SURVIVAL RATES

(Provide narrative on the results of the inventory and assessment of sites including figures, documents review and other observations. Include data on the percentage sites and corresponding stocking density and/or productivity.)

2. RESULTS OF KEY INFORMANT INTERVIEWS

(Indicate results of interview, particularly the number and the percentage of respondents that rated the contribution of the Program to the following:

1. Improvement of forest cover
2. Improvement of Ecological Stability and Climate
3. Improvement of biodiversity condition
4. Improvement of soil erosion
5. Improvement of Soil Quality
6. Improvement of water quality
7. Improvement of water availability

Indicate results of interview on:

1. socio-economic condition
2. satisfaction on subprojects
3. impression on the program
4. capacity/skills learned
5. challenges
6. facilitating and hindering factors

V. LESSONS LEARNED AND CHALLENGES

VI. CONCLUSION

(Provide whether the program implementation by the Region and its field offices was able to contribute to the objectives of NGP, and if the program was able to help its beneficiaries/stakeholders.

Provide regional survival rate and summary of factors affecting the attainment of such survival rate.

Provide summary of number of beneficiaries benefitting from the Program.

Provide summary of issues affecting the PENROs in properly recording the project sites in the Book of Accounts.)

VII. RECOMMENDATIONS

(Provide ways forward on how to properly turn over completed sites to DENR, and record sites from CIP to LI.)

Appendix B. (Sample Summary Report per Contract/Site)

RESULT ON THE INVENTORIED CONTRACTED AREA OUT OF THE SAMPLED PLOTS

PROFILE

| | |
|--------------------|---------------------|
| PO Name: | Contract Code: |
| Year Contracted: | Location(Mun/Brgy): |
| Age of Plantation: | Area (ha): 40 |
| Commodity: | |

Analysis Tables (for the Report Preparation)

| | |
|--------------------------------------|----------------------|
| Contracted Area: | 40 |
| Total Area of All the Sampled Plots: | 3 |
| Location | Malay, Napaan, Aklan |

Table : Summary of Stocking and Volume for All Sampled Plots in -hectare Polygon

| SPECIES | NO. OF TREES PER SPECIES | | | TOTAL VOLUME (Cubic Meters) | AVERAGE NO. OF TREES PER SPECIES PER HECTARE | ESTIMATED NO. OF TREES OF THE ENTIRE CONTRACTED AREA |
|----------------|--------------------------|----------------|--|--------------------------------|--|--|
| | Total | No. of Planted | No. of Originally Existing Trees, Saplings & I-M up Regenerants | | | |
| A | B | C | D | E | F | G |
| Aoson | 18 | 18 | - | 1.87 | 8 | 240 |
| Aun | 24 | 24 | - | 1.83 | 8 | 320 |
| Bedan | 15 | - | 15 | 0.03 | 8 | 200 |
| Betino | 62 | 62 | 4 | 2.90 | 24 | 560 |
| Betal | 4 | 4 | - | 0.30 | 1 | 53 |
| Bread fruit | 2 | - | 2 | 0.13 | 1 | 27 |
| Dubai | 2 | 2 | - | 0.16 | 1 | 27 |
| Indian mango | 1 | 1 | - | 0.02 | 0 | 13 |
| Lampia | 17 | 17 | - | 1.15 | 8 | 227 |
| Larzones | 1 | 1 | - | 0.03 | 0 | 13 |
| Malpagan | 26 | 26 | - | 2.09 | 8 | 373 |
| Maloca | 1 | 1 | - | 0.00 | 0 | 13 |
| Malapocava | 48 | 48 | 1 | 1.23 | 15 | 553 |
| Manga | 6 | 6 | 1 | 0.64 | 2 | 80 |
| Marpium | 12 | 12 | - | 1.33 | 4 | 160 |
| Merang | 6 | 6 | - | 0.05 | 2 | 67 |
| Molava | 4 | 4 | - | 0.10 | 1 | 53 |
| Mountain Agoho | 126 | 120 | 6 | 2.45 | 42 | 1500 |
| Nana | 30 | 27 | 3 | 0.55 | 10 | 400 |
| Putan | 1 | 1 | - | 0.04 | 0 | 13 |
| Ranobutan | 12 | 12 | - | 0.45 | 4 | 160 |
| Sampal | 16 | 16 | - | 0.65 | 8 | 240 |
| Total Average | 442 | 410 | 30 | 17.69 | 1 | 5992 |

Legend:

| | |
|---------|--|
| Total | |
| Average | |

Most Dominant Species Population: Mountain Agoho 126

Table : Summary of Health Status for all Plots in the _____ hectare Polygon

| SPECIES | TOTAL NO. OF TREES PER SPECIES | HEALTH STATUS | | HEALTH STATUS | |
|----------------|--------------------------------|----------------|--------------------|---------------|---------------|
| | | No. of Healthy | No. of Not Healthy | % Healthy | % Not Healthy |
| An-an | 18 | 18 | - | 100% | 0% |
| Auri | 24 | 24 | - | 100% | 0% |
| Badlan | 15 | 15 | - | 100% | 0% |
| Batino | 66 | 66 | - | 100% | 0% |
| Betel | 4 | 4 | - | 100% | 0% |
| Bread fruit | 2 | 2 | - | 100% | 0% |
| Duhat | 2 | 2 | - | 100% | 0% |
| Indian mango | 1 | 1 | - | 100% | 0% |
| Langka | 17 | 17 | - | 100% | 0% |
| Lanzones | 1 | 1 | - | 100% | 0% |
| Mahogany | 28 | 28 | - | 100% | 0% |
| Makopa | 1 | 1 | - | 100% | 0% |
| Malapapaya | 49 | 49 | - | 100% | 0% |
| Manga | 6 | 6 | - | 100% | 0% |
| Mangium | 12 | 11 | 1 | 92% | 8% |
| Marang | 5 | 5 | - | 100% | 0% |
| Molave | 4 | 4 | - | 100% | 0% |
| Mountain Agoho | 126 | 124 | 2 | 98% | 2% |
| Narra | 30 | 28 | 2 | 93% | 7% |
| Putian | 1 | 1 | - | 100% | 0% |
| Rambutan | 12 | 12 | - | 100% | 0% |
| Santol | 18 | 18 | - | 100% | 0% |
| Total/Average | 442 | 437 | 5 | 99% | 1% |

SUMMARY OF OBSERVATIONS OF SAMPLED PLOT

- 1 Presence or Absence of Manager/Claimant: Present (Name: _____) Absent
- 2 Current Average Spacing (___M X ___M)
- 3 What is/are the dominant (tall) planted trees species: _____
- 4 General Description of Stem Form: Majority are vertically straight, round and lignified Majority are not vertically straight (crooked or forked)
- 5 Presence or Absence of Other Floral Species Absence Present, If present, enumerate the species: _____
- 6 Presence or Absence of Faunal/Animal Wildlife Absence Present, If present, enumerate the species: _____
- 7 Incidence of pest and diseases: None There is/are, specify: _____

| Species | Specific Pest/Signs/Symptoms | Severity (Severe, Not Severe) |
|---------|---|-------------------------------|
| | Majority of plants are infested by termite (Dacotina) which affects the wood tissue | Not Severe |
| | | |
| | | |

- 8 Damage observed and its possible causes: None There is, specify the cause: _____
 - 9 Was there any replanting done after the contract period? Yes No No Info
 - 10 Recommendation whether the plantation needs silvicultural treatment (e.g., thinning, removal of vines)
-
- 11 Recommended major land-use For Production For Protection
 - 12 Feedback from the POs/Caretaker, if any
-
-

Note: Use the appropriate pro-forma for each component (i.e., for agroforestry, upland reforestation, mangrove reforestation and bamboo)

I. Maps and Photos of Sites Assessed and Inventoried

Site 1

Unique Code: _____

Land Cover Comparison

| Landcover Map of 2010 | Landcover Map of 2020 |
|-----------------------|-----------------------|
| | |

Google Map (Before and Current)

| (Image taken a year before its establishment) | (Current year) |
|---|----------------|
| | |

Map of Sampled Sites (including the sample plots)

| | |
|--|--|
| | |
|--|--|

This can be one or more if the contracted area has two or more sites.

Panoramic Photo

| |
|--|
| |
| |

Geotagged Photos

| | |
|--|--|
| | |
|--|--|

| | |
|--|--|
| | |
| | |

Site 2

Unique Code: _____

Land Cover Comparison

| Landcover Map of 2010 | Landcover Map of 2020 |
|------------------------------|------------------------------|
| | |

Google Map (Before and Current)

| | |
|---|----------------|
| (Image taken a year before its establishment) | (Current year) |
|---|----------------|

Map of Sampled Sites (including the sample plots)

| | |
|--|--|
| | |
|--|--|

This can be one or more if the contracted area has two or more sites.

Panoramic Photo



Geotagged Photos

| | |
|--|--|
| | |
| | |
| | |

A table with two columns and three rows, all cells are empty. This table is intended for geotagged photos.

Annex B. Process Flow of Monitoring, Evaluation, Review, Reporting and Supervision

