An Impact Analysis of the Comprehensive Agrarian Reform in the Second District of Camarines Sur

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THE PROBLEM

Background of the Study

As a developing country, the Philippines faces the challenge of alleviating poverty, especially in rural communities where farming is the primary source of income. Poverty in the Philippines is closely linked to the lack of access to agricultural land. In 2020, the government recognized this economic concern, considering rice as a staple food for most Filipinos and serves as the backbone of the country's economy. That year, rice production contributed 20% of the total agricultural value of the Philippines through the efforts of approximately 2.1 million farmers (Agway Chemicals Corporation, 2020).

Furthermore, as a staple food, rice accounted for more than 21% of calorie consumption and 76% of total rice intake among Southeast Asians (Mohidem et al., 2022). In 2021, the Philippines produced approximately 19.96 million metric tons of rice, harvested from about 4.81 million hectares, making a significant contribution to the agricultural sector. Despite this substantial production, the country remains a major rice importer, highlighting challenges in achieving self-sufficiency. Rice production accounts for 17% of the total agricultural output and provides employment for 2.4 million Filipino farmers (PCAARRD's Industry Strategic Science and Technology Programs, 2020). These circumstances emphasize the urgency of addressing land access issues to help uplift many Filipinos from poverty, particularly in rural areas. Limited access to land can be traced to the colonial-era landlord-tenant system, which created conflicts between landowners and tenants, particularly regarding ownership and control. Farmers demanded access to land, as it was their primary source of livelihood and sustenance (Frofunga et al., 2016).

To address inequitable land distribution, the government implemented agrarian reform as part of its poverty reduction strategies. The Philippine Constitution mandated an agrarian reform program aimed at emancipating tenant farmers. In 1935, President Manuel L. Quezon introduced a crop-sharing scheme to improve tenant farmers' conditions by ensuring they received a fair share of the harvest. In 1973, President Ferdinand E. Marcos initiated the rice and corn program, followed by President Corazon C. Aquino institutionalizing the Comprehensive Agrarian Reform Program (CARP) in 1987.

The 1987 Constitution emphasized the protection of farmers' rights and encouraged the distribution of agricultural lands. Additionally, the 1935 Constitution incorporated a social justice policy stating:

"The State shall formulate and implement an agrarian reform program aimed at emancipating the tenant from the bondage of the soil and achieving the goals enunciated in this Constitution."

Republic Act 6657, also known as the Comprehensive Agrarian Reform Program (CARP), signed by President Aquino on June 10, 1988, sought to reduce poverty, promote social fairness, and enhance rural development through land distribution and support services (Department of Agrarian Reform, 2023). The Department of Agrarian Reform (DAR), the program's implementing agency, plays a crucial role in fulfilling CARP's objectives. Under the Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP), support services are provided to beneficiaries, ensuring the long-term success of land distribution efforts.

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Under CARP, the government aimed to distribute agricultural lands to landless farmers. By 2020, approximately 4.9 million hectares had been distributed, covering about 90% of the target. However, challenges remain. As of June 30, 2022, DAR reported that around 173,340 hectares were yet to be distributed (Alano, 2023). The 2021 DAR Agency Performance Review Report revealed that the agency registered land covering 16,876.77 hectares, achieving 37.13% of its 45,455-hectare target. This benefited 11,317 agrarian reform beneficiaries (ARBs), or 32.13% of the targeted 35,225 ARBs. DAR also provided technical training, farm support, enterprise development, and infrastructure assistance to 755 ARBs, accounting for only 26.33% of the 2,867 ARBs targeted. The legal caseload included 59,485 disputes, with 83% successfully resolved.

Despite CARP's well-intentioned goals, rural poverty persists. As of 2021, DAR reported that only 37.13% of planned land distribution had been completed, with just 32.13% of ARBs benefiting. Moreover, only 26.33% of targeted ARBs received technical training and infrastructure support, limiting the program's effectiveness.

According to a recent Philippine Statistics Authority (PSA) report, farmers and fisherfolk remain among the country's poorest sectors. In 2021, fisherfolk had the highest poverty incidence at 30.6%, followed by farmers at 30%, children at 26.4%, and rural residents at 25.7%. Although farmers showed a slight improvement from 2018 to 2021, with poverty incidence decreasing by 1.6 percentage points, their economic struggles persist. The data underscores the need for better support services and sustainable development initiatives for agrarian reform beneficiaries (Sarao, 2023).

Additional challenges include financial instability, inadequate farming skills, and poor management practices. These issues negatively affect land reform projects, particularly CARP-acquired lands in upland or non-irrigated areas, where farming productivity remains low (Mapholi, 2014; Mercado et al., 2021). A survey of agrarian reform beneficiaries (Barrios et al., 2015) indicated that more than one-third of CARP-acquired lands are in upland areas, while over 40% are non-irrigated farms.

Studies by Tadem (2015), Frufonga et al. (2018), and Ballesteros et al. (2018) found that agrarian reform succeeded in redistributing land to landless farmers and improving their access to agricultural resources. However, it failed to ensure long-term productivity and sustainable development. While CARP provided land and led to higher incomes among farmer beneficiaries, it did not directly address landowners' concerns, such as land utilization rights, financial management, and business linkages for livelihood opportunities.

Despite being a tool for poverty alleviation, land redistribution and agrarian reform remain central issues in national socio-economic debates. Unlike previous studies, this paper evaluates the ARBDSP's effectiveness. While earlier research examined various aspects of CARP, this study focuses on causal pathways and differences in program impact, particularly in socio-economic indicators between ARBs and non-ARBs.

Statement of the Problem

This study aimed to evaluate the socio-economic impact of the Comprehensive Agrarian Reform Programs (CARP) in the second district of Camarines Sur.

Specifically, it sought to answer the following questions:

What are the objectives, indicators, and implementation processes of the Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP) implemented by DAR?

How do the program components and implementation processes relate to the impact pathway, and what are the causal links of the program that lead to impact?

What is the extent of the socio-economic impact of the ARBDSP on ARBs and Non-ARBs in terms of productivity and access to social services?

Is there a difference between the socio-economic indicators between beneficiaries with land titles and those without land titles?

What are the recommendations for possible enhancement of the ARBDSP?

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Significance of The Study

Results of the study may be used by various players and relevant stakeholders for various reasons.

Department of Agrarian Reform. They can use results of this study as an internal tool to identify weak areas of CARPs in operations and determine the appropriate measures for improvement and sustainability of the program, and as basis for a summative evaluation of the Comprehensive Agrarian Reform Program.

Agrarian Reform Beneficiaries. This can be a means for them to establish

consciousness on the status of the programs, and they should also be aware that the program is granted to them to improve their being and economic development.

Government and Non-Government organizations. This will benefit GOs and NGOs who are interested in assisting the DAR-CARPs particularly in providing funding or similar technical/financial assistance to the local community in undertakings social services of the institutions.

Academic Institution. The information in the study can be used as reference material by researchers, the administrators, the students and the faculty members who will be interested in conducting similar studies in the future that will contribute to the growing body of this topic.

Other Researchers. This may serve as reference to future researchers in conducting related and advanced studies for sustainability evaluation of projects/programs. Also, the results of this study may add to the existing related literature and studies specifically in the area of agrarian reform.

Scope and Delimitation of the Study

The study was confined to specific municipalities within the 2nd District of Camarines Sur with 21 barangays. The municipalities of Libmanan, Minalabac, San Fernando, Pamplona, and Pasacao were chosen because of their active participation in CARP programs and services. The study included a total of 170 respondents divided between 100 ARBs and 70 Non-ARBs across the mentioned barangays and municipalities. The ARBs were those who were awarded individual land titles under CARP from 2017 to 2018 with land areas not less than 1 hectare. However, the farmer who were non-ARBs were also selected based on ownership with land areas not less than 1 hectare. This way ensured the accurate assessment of the impact of CARPS in both groups since they have comparable land holdings.

This research on the impact of agrarian reform faced several challenges namely, limited time and resources, reluctance of some ARBs and non-ARBS to disclose more sensitive information about their land titles leading to adoption of rapid field appraisal approach making this necessary to verify land ownership and its actual size. This resulted in information that may not accurately represent the actual land tenure contexts of non-ARBs. Additionally, the study focused only on ARBDSP, which is the Agrarian aims to provide support services such as capacity development, Access to credit and financing, and Market linkages and enterprise development. The research did not focus on off-farm income as major part also of the rural livelihoods. This type of income can impact the respondents' economic stability and ability to invest in agricultural ventures. The absence of this data limited the study to provide a complete picture of the economic situations of farmers being affected or not by the impacts of the agrarian reform program. Another area of limitation was the time constraints, the researcher did not individually determine the income of each of the farmers with ample consideration to their crops. Although this data may make the outputs more substantial, this is reserved for more detailed study in another set of research objectives and agenda. In addition, the types of plants grown were no longer considered as variable or factors in determining the income of the respondents since the farmers adhere to crop rotation as part of their adaptation to weather condition in their specific place. Given these limitations, the findings should be viewed with caution. While the research offers valuable insights into the immediate effects of CARP on land tenure security and productivity, it does not cover the full range of the reform's long-term socioeconomic goals. Future studies with more resources and extended timeframes are encouraged to build on these preliminary findings.

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REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents the related literature and studies, synthesis of the state of the art, and the gap bridged by the study.

The comprehensive agrarian reform program has a positive impact on the lives of the farmer beneficiaries. It has contributed to higher income and led to reduced poverty incidence before and after the program. The beneficiaries tend to be better off in terms of well-being compared to before the implementation of the program (Frofunga et al., 2016) and Gordoncillo (2012). They evaluated the impact of CARP using income as the main economic indicator. The analyses showed that there have been significant positive changes to the economic well-being of the beneficiaries of the Program. The first difference was also significant across time or before and after the program comparison.

Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP)

The ARBDSP as the support service delivery programs, ensures that beneficiaries of agrarian reform receive support services such as infrastructure construction, marketing and production aid, loans, and capacity development/training. The ARBDSP, the third major program of the DAR aims to provide support services to ARBs, smallholder farmers and their organizations to enable them to become more productive, enterprising and later grow into vibrant players in community undertakings. Such services are provided individually to the beneficiaries or collectively through their organizations (ARBOs) and/or communities/areas (ARCs, ARC clusters, ARAs). The mode of delivery is either by direct implementation by the DAR or through facilitation and coordination with the other CIAs such as the DPWH, LBP, NIA, DOLE and DTI and other CARP key stakeholders like the POs, NGO, CSOs, the academe, the business/private sector, other GFIs, etc. The ARDSP Implementation are (a). Supervision and Management for Effective Delivery of Support Services, Conduct of IT-Enabled Maturity Assessment (ITEMA) to measure the level of maturity of Agrarian Reform Beneficiaries Organizations (ARBOs). (b)Sustainability Monitoring of Infrastructure previously completed and turned over to LGUs for maintenance. The DAR undertakes monitoring of all completed rural infrastructure projects such as irrigation system, farm-to-market roads, bridges, multi-purpose pavement, and others to ensure compliance of LGU partners' commitment to undertake proper maintenance works for such projects. (c) Supervision, Management and Monitoring and Evaluation. These activities are undertaken by the DAR at the Central Office, Regional and Provincial offices' levels.

However, in many cases, agrarian reform beneficiaries receive inadequate support services such as access to credit, technical training, and infrastructure. This hampers their ability to optimize their agricultural activities and improve their livelihoods (Frufonga et al., 2016).

Socio- Economic Indicator

In this study, the socio-economic indicators of ARBs and non-ARBs are improving the respondents' productivity and access to social services. The socio-economic status of Agrarian Reform Beneficiaries (ARBs) is significant, as it contributes to poverty reduction, and overall economic growth. By granting land ownership to farmers, agrarian reform enhances their productivity, income, and access to credit, leading to improved living standards. However, the success of agrarian reform depends on continuous support from the government, including access to training, financial assistance, and market linkages, to ensure that beneficiaries fully maximize the economic opportunities provided by land ownership.

The socio-economic indicators were applied to evaluate the impact of livestock in livelihood in Pakistan (2014-2015). In the study of farming system, it demonstrates that intervention applied achieve high yields and profit. However, the performance of other socio-economic indicators marked poorly documented on economic aspects of sustainability (Garibaldi et al., 2017).

The impact of agrarian reform on poverty, stressed that farmers commonly used chemical fertilizers to produce good and abundant crops. Almost three- fourths (74.1 percent) of farmers adopted the use of modern technology

in improving yield. Of the total farmers engaged in the practice of using chemical fertilizers, more than half (55.9 percent) were agrarian reform beneficiaries. Also, among ARB farmers, almost 80 percent used chemical fertilizers while almost 70 percent of non- ARB farmers did the same (Frofunga et al., 2016).

Recent analysis of Barrios et al., (2015) on CARP impact using nonexperimental methods that provided comparison between ARBs and non-ARBs shows positive correlation between ARBs and household income. Using the 2015 survey of ARBs and non-ARBs, it was noted that being an ARB has positive effects on total household incomes. The authors attributed this to better access to various factors of production that lead to increased total household income.

Adoption of technology, 41% ARBs are hesitant to try new techniques or do not want to take risks due to traditional farming attitudes, 16% cited lack of capital as reason for non-adoption of technologies. In terms of credit, nine or 28% suffered problems on past due loans and unmet requirements. Farmers cited that those policies of lending institutions cannot be met by borrowers in availing credit. In marketing, 72% cited low price of palay and lack of government support as problems (Mercado et al., 2021).

The low productivity in crop production among ARBs was attributed by 86% and 51% of them to production and marketing related problems, respectively. Among the major crop production related problems are the natural calamities, occurrence of pest and diseases, lack of irrigation facilities, and inadequate capital for the farm operations. Marketing related problems include low farm gate prices, high input prices, and high transportation costs, among others (Mercado et al., 2021).

Farmers' involvement in non-extension activities, while improving their skill sets, is also vital for improving the agricultural extension service system and bring desirable change in the farming community. Due to lack of skilled man power, budget deficit, absence of quality service, absence of extension facilities and lack of commitment of the government; agricultural extension did not bring desirable change in transforming the agricultural sector at large (Girma, 2022)

Impact Pathway Analysis

The Institutions are aimed to identify priority knowledge gaps, determining the best research approaches needed to fill those gaps, and exploring how to better support policy and program implementation with sound empirical evidence of 'what works (Webb, 2013).

The Participatory impact pathway analysis (PIPA) is a practical planning and assessment method designed for use with complicated research for development activities (Douthwaite, 2008; Delfino, 2013). PIPA begins with a participatory workshop in which stakeholders express their project's impact pathways (that is, the assumptions and hypotheses about how their project will achieve an impact, also known as the "Theory of Change"). PIPA improves evaluation by assisting managers and staff in formalizing their project's impact pathways and monitoring progress, encouraging reflection, learning, and adjustment along the way. PIPA also goes beyond the typical use of logic models and log frames by including stakeholders in a structured participatory approach, encouraging learning, and giving a framework for 'action research' on change processes.

This develops a two-stage monitoring, evaluation and impact assessment approach called impact pathway evaluation (agricultural development). This approach is based on program-theory evaluation from the field of evaluation, and the experience of the German development organization which focuses on agricultural change. (Douthwaite et al., 2008; Delfino, 2018).

CARP impact studies found some welfare impacts, but they were subdued and were concentrated in locations where the lands covered were more productive. It is also unclear that the mechanisms CARP used to boost wellbeing, as welfare impacts were identical amongst land-owning agricultural households that obtained land through CARP. There is also no clear evidence if the objectives of CARP to enhance investments in agriculture, expand access to formal financing for farmers, and equity have been met. (Ballesteros et al., 2018).

The study of Ballesteros et al., (2018), examined the performance of CARP by reviewing existing evidence and extending the earlier impact analysis done by the University of the Philippines Los Baños Foundation and the

Institute of Agrarian and urban Development Studies (UPLB-IARDS) using updated data. Using the UPLB-IARDS 1990–2000 panel data set, the study found that average real per-capita income among CARP beneficiaries increased from PHP 14,625 in 1990 to PHP 21,903 in 2000. The corresponding increase for non-CARP beneficiaries was from PHP 18,025 in 1990 to PHP 21,575 in 2000. This represented a 15-percent difference but was only marginally significant (p-value at 0.15). In terms of poverty dynamics, the new analysis found that 52 percent of CARP beneficiaries who were poor in 1990 became nonpoor in 2000. Meanwhile, 15 percent of CARP beneficiaries and 22 percent of non-CARP beneficiaries who were not poor in 1990 fell into poverty by 2000. These results indicated a positive but modest/minimal impact.

Synthesis of the State-Of-The-Art

The literatures and papers studied are relevant to this study since they introduced and explored how effect pathway analysis and sustainability evaluation are used and assessed.

Among the related literatures presented which bear similarities to the current study were those of (Delfino, 2015) discussed the impact pathway analysis as a practical planning and evaluation approach for use with complex research for development activities. Frunfonga, (2018) was conceptualized to explore the lives of the landowners under CARPs in the province of Iloilo. The agrarian reform program partly succeeded in distributing land to the tenants and the landless; however, it failed directly to address the needs and rights of the land owners as to just compensation, location of the right of retention, extraterritorial notice and the right to make use of their savings, social and business linkages to establish a new venture.

After almost 35 years since the CARP was enacted, it is imperative to undertake a study to evaluate the CARPs implementation as well as contribute to the results and analysis from the earlier studies related to the agrarian reform program in the country.

Gap Bridged by the Study

Most existing impact studies on the Comprehensive Agrarian Reform Program (CARP) have primarily focused on land distribution and its immediate economic effects, such as changes in household income, crop yields, or poverty incidence before and after the program. However, these studies often lack a comprehensive analysis of the causal mechanisms that connect specific interventions to observed outcomes. Moreover, few have given adequate attention to the support service components of the program, particularly the Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP). This study addresses these gaps by applying a Theory of Change (ToC) and Impact Pathway Analysis approach, enabling a deeper understanding of how various support services—such as capacity development, access to credit, and farm inputs—translate into tangible improvements in productivity and socio-economic well-being. Unlike prior research, this study also employs a quasi-experimental design using Difference-in-Differences (DiD) analysis, allowing for a robust comparison between Agrarian Reform Beneficiaries (ARBs) and Non-ARBs with similar landholdings, thereby isolating the actual impact of the program. It does not only look at whether change occurred, but also investigates why and how that change was or was not achieved by tracing causal links across program components.

Furthermore, it recognizes and addresses the implementation of quality and sustainability challenges that are often overlooked in earlier evaluations. By incorporating perspectives from both quantitative data and qualitative interviews, this study provides a more holistic and evidence-based evaluation of ARBDSP's effectiveness. In doing so, it offers new insights into the long-term sustainability and transformative potential of agrarian reform when support services are properly aligned with the needs of the beneficiaries. Thus, this study fills a critical gap in the literature by moving beyond outcome-level analysis and offering a program-specific, causally grounded, and policy-relevant assessment of CARP's broader socio-economic impact.

THEORETICAL FRAMEWORK

The following theories provided the roadmap by developing key arguments and premise of the study of Theory of Change (Arjomand, 2004).

Theory of Change. This theory believes that the advances that social change evolve from any alteration in the social order of a society-reflected for instance in institution or relations, were brought about the modified through

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process. It refers to a paradigmatic change in socio-economic structure. In this study, social change refers to the transformation of the government's economic structure—particularly in how resources like land and support services are distributed—driven by the improved socio-economic conditions of individual program beneficiaries. These changes result from development interventions such as the provision of land, training, and access to credit under agrarian reform.

This theory is a roadmap that serves as guide towards the achievements of specific goals through defined outline of the steps, concrete assumptions, and assumed outcomes to reach desired results. This approach is crucial since it leads people to think critically about the significant and causal factors that may contribute to success and may allow strategic adjustments to enable the project to be an efficient one (Camargo & Schönberg, 2023).

This theory of change also recognizes assumptions that may affect the success patterns among the farmers' endeavors. More specifically, the determining factors of the success of the program can be the type of land, acquisition of necessary farming skills and the access to the market and farming infrastructure to support the programs objectives and goals. This theory advocates formulating these kinds of assumptions in the context of the agrarian program because these variables can either help or hinder the progress of the programs.

In other words, the tenets of Theory of Change enable stakeholders and the department to continuously learn, adapt and innovate to respond to changes. When desired outcomes are not being met, the organization must revisit the implementation process where the Theory of Change can shed light on identifying where and why problems might be occurring and define resolutions to address them. As mentioned by Manen et al., (2021), according to Reisman and Gienapp (2004) there is a call for a better and more efficient delivery of services or infrastructure if productivity is not increasing despite land distribution. This scenario must definitely prompt the department to do a reevaluation of strategies employed and must consider the beneficial advantages of collaborative efforts with the stakeholders.

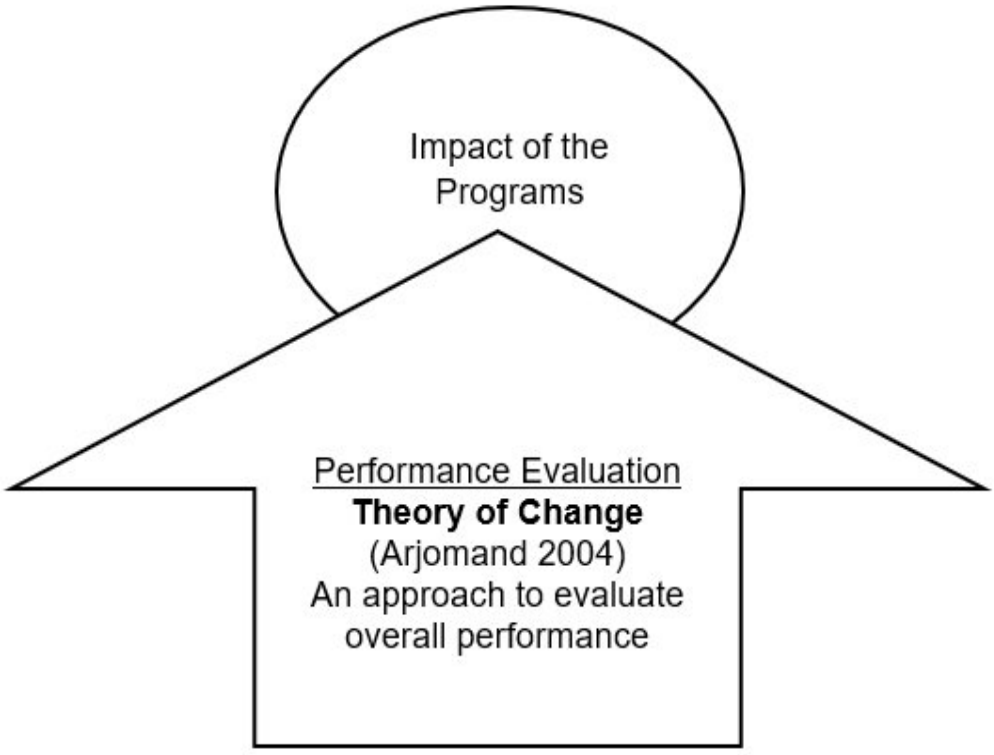

Figure 1. Theoretical Paradigm of the Study

Theory of Change has provided the study a background in formulating a more structured and flexible way to understand the impacts of CARP as an agrarian initiative. Its principles also enhanced the substantiation of the impact by taking a closer look at the pathways from distribution activities to outcomes inventory. This ensures that every action taken is aligned to improving the lives of agrarian reform beneficiaries as the ultimate goal of the program (Manen et al., 2021).

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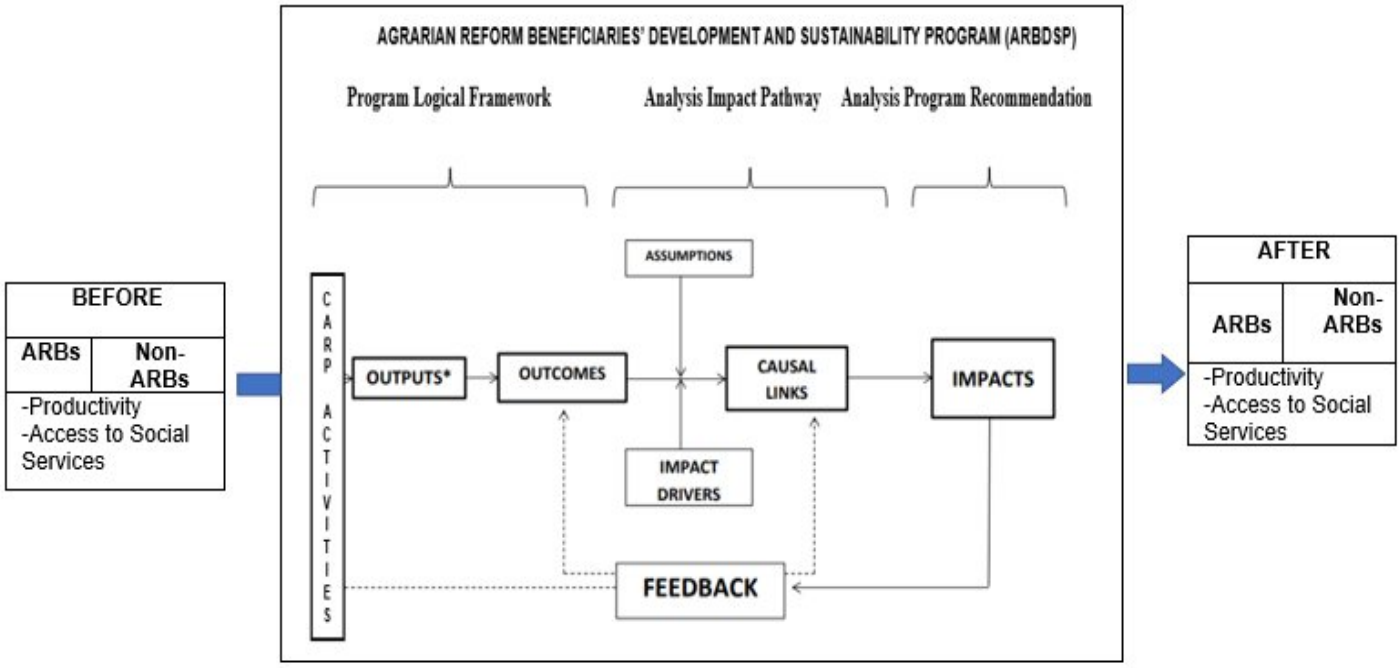
CONCEPTUAL FRAMEWORK

The conceptual framework of the foregoing study is schematically divided into three major procedures namely: **program logframe analysis**, **outcomes impact analysis** and **program recommendations** to enhance the implementation.

The Conceptual Paradigm of the study is illustrated in Figure 2.



Legend: Schematic Conceptual Paradigm of the study (Adapted from Review of Outcome to Impact Handbook 2009)

The inclusion of determining the socio-demographic variables as inputs in this study is essential for a deeper contextual understanding of the status and challenges faced by the ARBs and Non-ARBs specially prior to the implementation of CARP. This information are the foundational elements that may have an influence on the productivity levels and access to social services among these farmers. The age distribution can reflect the generational makeup of the farming population where aging demographics may have implications on their physical labor capacity, innovation and agricultural sustainability. This data can help to fully evaluate how these age-related factors may impact the effectiveness of agrarian reform interventions. Also, the gender and civil status among these rural communities where predominantly male and married can imply the labor capacity and farm management which are all crucial to tailor approaches according to the household dynamics in agriculture.

In the same manner, educational attainment is another critical factor to determine the ability of the farmers to learn and acquire technical knowledge and adopt agricultural innovations. Thus, low levels of formal education can be a barrier in implementing modern farming practices and participating in capacity-building programs. Another factor is the household size where larger households may offer more labor but have also increased demands on food, income and other social services. These dynamics can produce more substantial analysis on the agricultural productivity and farm management. Another element are the health conditions of the respondents that may influence the physical capability of farmers to sustain daily farm operations. In other words, poor health reduces labor input and affects the household overall productivity and economic stability.

The size of the land per farmer is also important to check on the scale of agricultural operations because small-scale cultivation may limit the generation of sufficient income or invest in farm improvements. Thus, this variable is essential to assess how land access affects livelihood outcomes. The access to support services is a direct link to the core of agrarian reform where the differences in the respondents' access may reveal the range of effectiveness and limitations of CARP. These aspects can help identify the gaps in service delivery and assist

in drafting more targeted improvements. Lastly, the data on the pre-CARP income levels is a baseline to substantially evaluate the economic mobility and livelihood changes among the farmers over time. This assessment can show whether CARP interventions brought meaningful improvements on income or persistent barriers continue to limit the economic advancement. The whole data on these socio-demographic profiles is a holistic and accurate way to assess the effectiveness of the actual and varied needs of the CARP beneficiaries.

The second stage is the program log frame analysis. It includes the validation and examination of the programs. The data to be evaluated include the CARP's objectives, outputs, and indicators, which assist formulate the following step, which is the outcomes-impact pathway analysis. The input are the CARPs for ARBDSP (Support Services on Trainings/ Capacity Development, Farm Tools, Credit). The Activities are Conduct Pulong Pulong and Trainings. The outcome are Access to support services (Trainings, Tools and Equipment, and credits).

Tracing the impact pathway analysis of CARPs and the causal links of the various components of the individual project, the outcomes-impacts analysis will follow. Once the study understands the CARPs log frame, the next step is to apply the Outcomes to Impacts which focuses on the process of outcome-impact pathways. These Outcome Impact routes are at the core of the technique since this is the process of transforming project outputs into effects. The impact is the increased Monthly Income, size of land and cropping.

After the outcomes-impacts analysis has been established and causal links have been mapped, program recommendation to enhance the implementation of CARPs follows. This stage is the logical step of the study's conceptual framework in order to apply the quantified economic impact data using econometric data analysis to verify intensively if the impact has a significant relationship with the development and sustainability of the existing project and later plan for a change. The last stage is to identify the status of ARBs and Non-ARBs after the programs in terms of Productivity and Access to Social Services.

Definition of Terms

The study defined the concepts and indicator as presented in this section.

Access to Social Services. access to a range of essential resources to improve their agricultural productivity. These resources include financial support through loans or credit, and access to farm inputs such as seeds, fertilizers, and equipment. Additionally, ARBs are provided with trainings and capacity-development programs, such as training in sustainable farming practices and entrepreneurial skills, as well as access to markets to ensure fair pricing for their products. As part of the access to social services indicators, this word was utilized in the study to refer to the widening of the neighborhood ties among the farmers so the linkages may improve farmers' best practices and increase connections for a stronger network. In this study the indicators are support services availed from DAR and other government agencies.

Agrarian Reform Beneficiaries (ARBs). They are the individuals or groups who are qualified to receive lands under agrarian reform programs. ARBs who received Individual Title from 2017 and 2018 with more than 1 hectare cultivating land area.

Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP). This is a support service delivery component of CARP. It aims to aid the agrarian reform beneficiaries by providing them necessary support services to make their lands more productive such as capacity development or training, farm tool and equipment, credit and training.

Agrarian Justice Delivery Program (AJDP). This is the area of the program where free legal assistance to farmer-beneficiaries is given when affected by agrarian cases, and is tasked to ensure that ARBs receive fair and just treatment in the distribution of agricultural lands and the protection of their rights.

Causal Links. These refer to the transitional conditions between the project's outcomes and impacts that must be achieved in order to deliver the intended CARPs impact of the ARBs.

CARP Program Objectives. For ARBDSP, capacitate ARBs through Trainings, and access to basic social services on tools/ equipment and microfinance to make their land productive.

CARP Program Indicators. For ARBDSP, number of ARBs trained on various capacity trainings, number of ARBs provided with tools/equipment and facilities, number of ARBs with access to credit and microfinance services.

CARP Program Implementation Process. Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP), the process is (a). Supervision and Management for Effective Delivery of Support Services, Conduct of IT-Enabled Maturity Assessment (ITEMA) to measure the level of maturity of Agrarian Reform Beneficiaries Organizations (ARBOs). (b)Sustainability Monitoring of Infrastructure previously completed and turned over to LGUs for maintenance. The DAR undertakes monitoring of all completed rural infrastructure projects such as irrigation system, farm-to-market roads, bridges, multi-purpose pavement, and others to ensure compliance of LGU partners' commitment to undertake proper maintenance works for such projects. (c) Supervision, Management and Monitoring and Evaluation. These activities are undertaken by the DAR at the Central Office, Regional and Provincial offices' levels.

Comprehensive Agrarian Reform Program. Republic Act No. 6657, otherwise known as the Comprehensive Agrarian Reform Law (CARL). It is the redistribution of private and public agricultural lands to help the beneficiaries survive as small independent farmers, regardless of the "tenurial" arrangement. Its goals are to provide landowners equality in terms of income and opportunities, empower land owner beneficiaries to have equitable land ownership, enhance agricultural production and productivity, and put an end to conflicts regarding land ownership.

Impact Pathway Analysis. This is the analysis of the causality of components of CARPs to achieve the outcomes to impact employing the Theory of Change.

Income. As mentioned by Wyk and Dippenaar (2017), according to Chambers Dictionary (2015), income is regarded as the profit or interest from anything or is referred to as revenue as well. In the context of this study, this word is used to refer to the financial gains from farm produce earned by the farmers after tending and toiling the land.

Indicator. This is an instrument for measuring and recording variations of changes on CARPs. Number of ARBs access support services (Capacity Development, Trainings, Tools and Credit).

Land Tenure Security Program (LTSP) seeks to secure the tenurial status of the farmers through Registration and Distribution of Individual Title.

Non-ARBs. Are farmers with more than 1 hectare located in the 2nd District of Camarines Sur.

Outcomes. These refer to the systematic effects that the program that makes a contribution towards, and that are designed to help achieve the project's impacts. Outcomes is access to support services (Trainings, Tools and Equipment, and credits).

Outputs. This refers to the services of the program that must be delivered to achieve the project outcomes. Outputs are ARBs trained on various courses on capacity trainings, access to credit services, provided with farm tools/equipment's and physical infrastructure

Productivity. This term is used as one of the indicators to determine the impact of land reforms on farmers, specifically in terms of their income and yield performance. Income includes net income per production cycle, monthly earnings, and other sources of income. Yield performance refers to the size or area of cultivated land. In this context, productivity is measured as the output (income), while the input is the yield performance.

METHODOLOGY

This chapter discusses the research design, location of the study, respondents, sampling, data gathering and data analysis.

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Research Design

The quasi-experimental design utilized in the study helped to achieve a structured comparison between Agrarian Reform Beneficiaries (ARBs) and Non-Agrarian Reform Beneficiaries (Non-ARBs). It also isolated the socio-economic impacts of the Comprehensive Agrarian Reform Program (CARP) on income, productivity, and access to social services. This design allowed the study to analyze the comparable settings of the pre-existing groups in terms of land size and geographic location since random assignment was not feasible due to ethical and logistical constraints. Meanwhile, difference-in-differences (DiD) analysis, helped the study to provide empirical evidence to evaluate whether observed changes in the livelihood of ARBs could be causally attributed to the implemented interventions of DAR rather than external factors. The purpose of this design was to facilitate causal inference in a real-world setting so that the findings can reflect the practical policy implications. Additionally, this approach provided a structured evaluation framework for natural variations and external influences to make the conclusions relevant to the assessment of the long-term sustainability of CARP specially in improving the socio-economic conditions of the beneficiaries.

This approach helps assess the effectiveness of agrarian reform in reducing poverty and improving socio-economic well-being, though it is limited by the possibility of selection bias and external variables influencing the results.

Location of the Study

This study covered the municipalities in second district of Camarines Sur, the Libmanan, Minalabac, San Fernando, Pamplona, Pasacao, Milaor and Gainza.

Figure 3. Second Districts of Camarines Sur

Municipality of Libmanan, has been recognized as a significant rice producer, often referred to as the "rice-basket" of the province. In addition to rice cultivation, farmers in Libmanan engage in the production of high-value crops. For instance, in Barangay Mambalete, a 14-hectare plantation utilizes modern technologies such as drip irrigation and fertigation to grow sweet corn, eggplant, squash, cucumber, and watermelon. Livestock farming also contributes to the local economy. To support and modernize agricultural practices, the Department of Agrarian Reform has provided local farmers with essential tools and technologies. For example, the Awayan Libmanan Agrarian Reform Beneficiaries Organization received a 35-horsepower combine harvester and a compact rice mill, aiming to enhance productivity and reduce manual labor. These diverse agricultural activities underscore Libmanan's role as a key contributor to the agricultural output of Camarines Sur.

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The municipality of Minalabac has benefited from irrigation projects, such as the rehabilitation of the Taisan Dam, which now irrigates 350 hectares of farmland in Barangays San Jose and Magadap. In addition to rice, Minalabac's agricultural landscape includes coconut farming and the cultivation of various root crops.

The municipality of San Fernando, the agriculture plays a pivotal role in San Fernando's economy, with rice cultivation being the predominant agricultural activity. In recent years, the municipality has diversified its agricultural practices to include high-value crops. Notably, The Cacao Project was initiated to promote sustainable cacao farming, providing farmers with seedlings and training to establish resilient livelihoods. These efforts reflect San Fernando's commitment to enhancing agricultural productivity and sustainability, ensuring economic growth and resilience for its farming communities.

The municipality of Pamplona, the main agricultural products include coconuts, upland crops, and rice. In addition to crop cultivation, farmers in Pamplona also engage in animal husbandry, raising livestock such as carabaos and swine. To support agricultural development, the municipality has invested in infrastructure projects like farm-to-market roads. These improvements aim to facilitate the efficient transport of farm products and inputs, thereby enhancing trade and commerce within the region.

Pasacao, a coastal municipality in Camarines Sur, agriculture plays a significant role in Pasacao's economy, with various crops cultivated across its barangays. The Department of Agrarian Reform awarded land titles to 50 agrarian reform beneficiaries in Pasacao, covering a total of 303 hectares. This initiative aims to enhance agricultural productivity and provide sustainable livelihoods for local farmers.

In the Municipality of Milaor, many residents engaged in farming activities. The primary agricultural products include, Rice (Palay), Coconut, Corn and Mango.

Municipality of Gainza, the agriculture is the primary economic activity, with about 80% of its land dedicated to farming. The main agricultural products include Rice: 44%, Carrots: 3%, Cabbages: 25%, and root crops: 28%. Despite its agricultural focus, farmers in Gainza face challenges such as limited access to credit, technological barriers, and poor market connectivity due to inadequate infrastructure. These issues hinder their productivity and economic advancement. Efforts are ongoing to improve infrastructure, including the construction of new roads and bridges to enhance connectivity within the municipality and to neighboring areas.

Sampling Technique

This study utilized stratified random sampling to ensure the proportional representation of both Agrarian Reform Beneficiaries (ARBs) and Non-ARBs across the varied barangays in the 2nd District of Camarines Sur. This way, the study secured the reliability and comparability of results for these group-specific characteristics. Hence, the population was divided into two strata (ARBs and Non-ARBs) who were randomly selected and Slovin's formula helped determine the appropriate sample size:

$$n = \frac{N}{1 + Ne^2}$$

where:

n= total number of respondents; N= total number of CARPs beneficiaries; e=margin of error (0.07)

From the calculated sample size, the respondents were stratified accordingly to the number of members in each area covered by the CARPs.

Respondents of the Study

Through stratified random sampling, respondents were identified per area where the programs and services of CARPs were implemented. A total of one hundred seventy (170) ARB's respondents were identified, one hundred (100) of them were ARBs, and seventy (70) were non-ARBs. The ARBs were those who were awarded

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with individual land titles for at least 1 hectare of land under CARP from 2017 to 2018 and the non-ARBs were also farmers with at least one hectare of land.

The author determined the participants in the study who are directly involved in farming activities and who are at least 18 years old. This age requirement was necessary to hold whatever information they share as to be reliable. In terms of exclusions, potential respondents who received land titles but are not actively farming by the time of the study were not included. In addition, those who are non-farming landowners and agricultural workers who do not have ownership or tenure rights over their lands were also excluded. Lastly, any from the selected qualified respondents who could not or chose not to provide information were not coerced to participate.

Table 1. Respondents of the Study

Barangay/ Areas	**ARBs**		**Area**	**Non-ARBs**		**Area** (in	**Total** Respondents
	N	Sample Unit	(in hectares)	N	Sample Unit	hectares)	(ARBs and Non-ARBs)
Libmanan	**103**	**75**	**174.7474**	**103**	**52**	**71.0000**	**127**
Awayan	1	0	2.0000	1	0	1.0000	0
Bagadion	8	6	14.042	8	4	8.0000	10
Bagumbayan	2	1	3.0857	2	1	2.0000	2
Beguito Viejo	8	6	11.5654	8	4	9.0000	10
Cambalidio	26	23	50.8737	26	15	16.0000	38
Ibid	7	5	11.4557	7	3	8.0000	8
Mambalite	6	4	12.3926	6	3	6.0000	7
Mambayawas	6	4	9.2744	6	3	6.0000	7
Mambulo Nuevo	3	2	4.7889	3	2	3.0000	4
Mambulo Viejo	5	3	6.8299	5	3	4.0000	6
Mantalisay	4	2	5.31	4	2	3.0000	4
Sigamot	6	4	7.2643	6	3	5.0000	7
Tinalmud Viejo	16	12	26.118	16	7	11.0000	19
Villadema	5	3	9.7468	5	2	5.0000	5
Minalabac	**5**	**1**	**6.6365**	**5**	1	**5.0000**	**3**
Baliuag Viejo	1	0	1.5382	1	0	1.0000	0
Irayang Solong	2	1	2.0353	2	1	2.0000	2
Mataoroc	1	0	1.95	1	0	1.0000	0
Taban	1	0	1.113	1	0	1.0000	0
San Fernando	**6**	**3**	**12.3153**	**6**	**3**	**4.0000**	**6**
Bonifacio	2	1	2.5896	2	1	2.0000	2
San Joaquin	4	2	9.7257	4	2	2.0000	4
Pamplona	**6**	**4**	**9.2759**	**6**	**3**	**4.0000**	**7**
Cagbunga	6	4	9.2759	6	3	4.0000	7
Pasacao	**24**	**17**	**68.577**	**24**	**11**	**16.0000**	**28**
Balogo	6	4	14.8397	6	3	3.0000	7
Caranan	2	1	5.7373	2	1	2.0000	2
Dalupaon	16	12	48.0000	16	7	11.0000	19
TOTAL	**144**	**100**	**271.5521**	**144**	**70**	**116.0000**	**170**

Legend: DAR Camarines Sur 1 EP/CLOA Information System & Operation Tool

To safeguard the confidentiality of the respondents in data gathering, the researcher initially sought the permission from Mayor's office and the respective offices of the Punong Barangays.

Data Gathering Procedure

Upon the approval of the research proposal, necessary permits were secured from the appropriate authorities. Permits for undertaking the study were obtained from the concerned offices, including the Municipal Mayors of

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the 2nd District of Camarines Sur, the Municipal Agrarian Reform Offices, the Municipal Agriculture Offices, and the Department of Agrarian Reform (DAR) Provincial Office of Camarines Sur I.

After the preliminary activities, the key steps necessary to generate the required data were implemented. The actual survey was then conducted using the validated questionnaire and face-to-face interviews to gather information on institutional, socio-economic activities, and interventions of CARP. This data collection process involved several major stages aimed at analyzing the causal links between project components: Documentary Analysis, Impact Pathway Analysis, Econometric Tools (Counterfactual), Questionnaire Survey, Data Gathering Tools, and Key Informant Interviews.

In addition to primary data collection, secondary data sources were also utilized. Data on Agrarian Reform Beneficiaries (ARBs) were obtained from the Department of Agrarian Reform (DAR), while data concerning non-ARBs were sourced from the Department of Agriculture (DA). These secondary sources provided essential background information and helped in validating findings from the primary data.

Data Gathering Instrument

This study employed a mixed research design. Mixed research Design is a strategy for gathering, evaluating, and mixing quantitative and qualitative research methodologies in a single study to better comprehend a research subject (Fischler, 2014; Delfino 2015). The mixed design incorporated a mixture of methodologies, specifically quantitative and qualitative methods. The quantitative method was utilized to measure the socio-economic impact on ARBs and Non-ARBs using a difference-in-difference methodology. This qualitative study used two methodologies to achieve its objectives: impact pathway analysis.

Survey Questionnaire

The questionnaires for respondents consisted of four (4) parts namely: Part I Socio-Demographic Profile, Part II Productivity, Part III Access to Social Services, Part IV Recommendation.

The questionnaire used was divided into four parts: Part I Socio-Demographic profile of the respondents which includes the name, age, gender, civil status, educational attainment, household status, and land tenure services. Part II Productivity main source of water, mode of transportation, source of power, household condition/illness, means of communication, monthly income before and after CARPs, Net Income and other Source of Income. Part III Access to Social Services which in includes availed support services like Capacity Development/Trainings, Credit/Microfinance Assistance, Farm Tools/Equipment and etc. and Support services availed from other government agencies. And the Part IV are Recommendation to improve CARP Programs.

Survey questionnaires were delivered to identifiable respondents, including ARBs with Individual Titles 2018 and non-ARBs with not below 1 hectare cultivated land area. Data was generated to measure and assess the socio-economic impact of a CARPs initiative on its recipients as a significant support for its sustainability review.

The validity of the quantitative instrument was ensured by aligning the questionnaire on the specific objectives of the study. The content was held valid since it was finalized and established through consultations with experts in agrarian reform, socio-economic development personnel while the linguistic validity ensured by the adviser and other language teachers to assess whether the items formulated adequately covered the intended variables and problems.

The study focused on two groups of people: Agrarian Reform Beneficiaries (ARBs) and Non-ARBs. The ARBs were individuals who received their own land titles between 2015 and 2018 and have been actively farming their land since then. On the other hand, Non-ARBs were those who have been cultivating at least one hectare of land in the same area.

Focus Group Discussion

Through detailed interviews or a focus group discussion, the lived experiences and perspectives of ARBs and Non-ARBs were explored. For the qualitative component, the study also explored the lived experiences of the

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respondents and their perspectives. This procedure entailed the employment of the Impact Pathway Analysis through detailed interviews and focus group discussions (FGDs) conducted. These methods enabled the researcher to capture deeper insights into the actual impact the beneficiaries and non-beneficiaries have experienced with the agrarian reform programs. The qualitative data earned through these interviews were designed based on relevant literature and were patterned to explore key themes related to the socio-economic impact of the agrarian reform.

Key Informant Interview

The key informant interview was conducted with the head of each division. They were asked for information to supplement the data gathered during face-to-face interviews. The major informants were the CARPOs/Heads of Programs. These important informants shared information about the actions carried out, strategies, and financial/Physical requirements related to the programs.

Data Analysis

Descriptive Statistics. The study employed descriptive statistics specifically in summarizing respondent profiles, land tenure, support services.

Documentary Analysis. In this activity, the objectives, activities, outputs and indicators of implemented programs in DAR Camarines Sur 1 specifically in 2nd District of Camarines Sur were validated. Through interview with CARPO in LTSP, CARPO in ARBDSP and Legal Chief in AJDP and evaluation of several documents such as work and financial plan, annual report, performance reports which indicates the physical accomplishment and financial statements, the implemented programs were also documented.

Impact- Pathway Analysis. The causality of the different components to achieve the outcomes and impacts were analyzed. First the activities/inputs, and outputs were determined and casual links were established. Then, the interrelation between the outcomes and impact were transitionally done through the outlining of causal links. Linkages were identified and categorized into productivity, social services and socio- economic. These were the evaluated criteria for program sustainability. Improved livelihood and productivity among the ARBs, Increased self-reliance and better integration into the farming methods for better agricultural economy, showed higher productivity and economic stability for the ARBs. This enhanced agricultural produce and sustainability.

Impact Analysis in this study promotes accountability and transparency in the implementation of CARP. By evaluating its outcomes and performance, stakeholders can hold responsible agencies accountable for their actions and ensure that resources are used effectively and ethically. Overall, Impact Analysis is essential for understanding the effectiveness, strengths, weaknesses, and implications of CARP. It provides valuable insights for policymakers, researchers, and stakeholders to improve the program, allocate resources efficiently, and ultimately enhance its impact on farmers, rural communities, and the overall development of the Philippines.

Content Analysis. Aside from the results generated by the statistical tool utilized, the data were also substantiated by the actual responses from the respondents during the focus group discussion facilitated by the author. The responses were recorded with the verbal permission from the author prior to the actual interview. The data gathered through this procedure enabled the results to become more contextualized and thus become more comprehensible.

Productivity. To evaluate the impact of land reform programs on farmer beneficiaries, productivity was used as a key indicator. Productivity was computed using the formula:

Productivity = Total Output (Monthly Income) / Total Input (Cultivated Land Size)

This ratio provides a standardized measure of how effectively farmers convert land input into economic output, allowing for comparison across different farmer groups. Specifically, it measures the income generated per hectare of cultivated land, thus reflecting the economic efficiency of land use.

Data on monthly income and cultivated land size were collected through validated questionnaires and verified through official records where possible. The computed productivity values were analyzed to identify differences

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between ARBs and non-ARBs, aiming to determine whether land reform interventions have led to improved economic outcomes for the target beneficiaries. Descriptive statistics (mean, median, standard deviation) were used to summarize productivity across groups, while inferential analyses such as t-tests are employed to test for statistically significant differences and assess the influence of institutional and socio-economic factors on productivity outcomes.

Statistical Tools

The study employed both descriptive and inferential statistical tools to evaluate the socio-economic impact of DAR-implemented programs on the productivity of Agrarian Reform Beneficiaries (ARBs) and Non-ARBs.

Mean, Median, Standard Deviation (SD) and Standard Error (SE). These statistical tools were used to summarize key characteristics of the dataset to produce more comprehensible information about the income, production levels, and the costs. These tools also determined the comparisons across ARBs and Non-ARBs with the standard deviation that indicated the variability in the income within each group.

Mann-Whitney U test. To assess differences in socio-economic indicators, the Mann-Whitney U test was applied. Specifically, this tool was used to evaluate the annual gross production per hectare, selling price per unit, total initial capital investment, cost of production per hectare, and net income per hectare. The p-values derived from the treatment indicated significant differences between the groups.

Wilcoxon Signed-Rank Test. This statistical tool was used to analyze income changes during the pre and post implementation of CARP for both ARBs and Non-ARBs.

Difference-in-Differences (DiD) Analysis. This method is used to compare the before and after outcomes of two groups that have been affected by an intervention. This looks for the difference in outcomes between two groups before and after the intervention has been implemented. This evaluated the socio-economic impact on the respondents using monthly income on 2017 and monthly income on 2023 of ARBs and Non ARBs , following:

DID estimate (δ_1) = measures the impact of the intervention, where

$$\delta_1 = (\text{Post}_{\text{treatment}} - \text{Pre}_{\text{treatment}}) - (\text{Post}_{\text{Control}} - \text{Pre}_{\text{control}})$$

DID = (Y1 - Yo) - (X1 - Xo)

Variables:

Pre- Control (X0)- income 2017 non-ARBs

Post- Control (X1)-income 2023 non-ARBs

Pre-Treatment (Y0)- income 2017 ARBs

Post-Treatment (Y1)- income 2023 ARBs

The counterfactual **i**n this study represents the estimated outcome for Agrarian Reform Beneficiaries (ARBs) in 2023 had they not received the intervention. Since it is impossible to directly observe this scenario, the counterfactual is inferred from the income changes of the non-ARBs (control group), assuming both groups would have followed a similar direction and development in the absence of the intervention. By comparing the pre-treatment (2017) and post-treatment (2023) incomes of both groups, the DiD approach isolates the impact of agrarian reform on ARBs' economic conditions. The key assumption is that any differences between ARBs and Non-ARBs before the intervention would have remained constant over time if the intervention had not occurred. Thus, the difference in income growth between the two groups reflects the actual impact of the agrarian reform program on ARBs, with the counterfactual serving as a baseline for comparison.

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RESULTS AND DISCUSSION

This chapter discusses the findings based on the evaluation of DAR program objectives, its indicators, and implementation processes; the relationship between program components and impact pathways, the socio-economic impact on ARBs and Non-ARBs in with their productivity and access to social services and the comparison of socio-economic indicators between beneficiaries with and without land titles and recommendations to improve DAR programs.

Socio-economic and Demographic Profile of the Respondents

The socio-economic and demographic profile of the respondents included the essential background information necessary to formulate more contextualized analysis of the impact of DAR-implemented programs. They are the respondents' age, sex, civil status, educational attainment, household size, primary source of income, monthly income, and land ownership. The characteristics of the respondents can substantiate the individual and household attributes that influence the effectiveness and reach of the Comprehensive Agrarian Reform Program (CARP) among its beneficiaries the 2nd District of Camarines Sur.

Table 2. Socio-economic and Demographic Profile of the Respondents

Attributes	ARBs		Non-ARBs	
	Frequency	Percentage	Frequency	Percentage
Age Group				
18-30	0	0	0	0
31-40	0	0	1	1
41-50	5	5	4	6
51-60	25	25	32	5
60-70	55	55	23	33
70-above	15	15	10	14
Total	n=100	100%	n=70	100%
Sex				
Male	55	55	43	61
Female	45	45	27	39
Total	n=100	100%	n=70	100%
Civil Status				
Single	3	3	0	0
Married	83	83	58	83
Separated	1	1	0	0
Widowed	13	13	12	17
Total	n=100	100%	n=70	100%
Educational Attainment				
Elementary Graduate	39	39	20	29
Elementary level	27	27	12	17
Secondary Graduate	13	13	22	31
Secondary level	9	9	9	13
College level	3	3	0	0
College Graduate	8	8	7	10
Vocational	1	1	0	0
Total	n=100	100%	n=70	100%
Household Size				
2-4 members	49	49	11	16
5-8 members	49	49	58	83
9-12 members	2	2	1	1
13 and above	0	0	0	0
Total	n=100	100%	n=70	100%

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Health Condition				
Health Problem	46	46	23	33
No Health Problem	54	54	47	67
Total	n=100	100%	n=70	100%
Cultivating Land size				
1 hectare	59	59	55	78
2 hectares	17	17	13	19
3 hectares and above	23	23	2	3
Total	n=100	100%	n=70	100%
Support Services Availed				
Availed Capacity Development Training				
Yes	95	95	0	0
No	5	5	70	100
Total	n=100	100%	n=70	100%
Availed Credit/ Microfinance Assistance				
Yes	4	4	0	0
No	96	96	70	100
Total	n=100	100%	n=70	100%
Availed Farm Tools/Equipment				
Yes	38	38	0	0
No	62	62	70	100
Total	n=100	100%	n=70	100%
Availed Others Services (Seeds & Fertilizer, and Cash Assistance from DA)				
Yes	69	69	70	0
No	31	31	0	100
Total	n=100	100%	n=70	100%
Income				
Monthly Income Before CARPs (2017)				
Below -1,000	0	0	0	0
1,000-2,999	21	21	6	9
3,000-4,999	23	23	11	16
5,000-6,999	21	21	8	11
7,000-9,999	0	0	0	0
10,000-above	35	35	45	64
Total	n=100	100%	n=70	100%
Monthly Income After CARPs (2023)				
Below -1,000	0	0	0	0
1,000-2,999	21	21	6	9
3,000-4,999	23	23	11	16
5,000-6,999	21	21	8	11
7,000-9,999	0	0	0	0
10,000-above	35	35	45	64
Total	n=100	100%	n=70	100%

Table 2 shows that majority of both ARBs (55%) and Non-ARBs (33%) are within 60–70 age group while very few below 50 years old. It is also apparent that males dominate both groups with Non-ARBs (61%). Most respondents in both groups were married (83%). Respondents' educational attainment is also relatively low (ARBs, 39%, Non-ARBs, 29%) where they only completed elementary education. In terms of household size, Non-ARBs (83%) and ARBs (49%) thrive in 5-8 members in every household. 46% of ARBs reported some health problems while there were only 33% among the Non-ARBs. With regards to land cultivation, both groups cultivate 1 hectare among the 59% of ARBs and 78% of Non-ARBs. Significantly, there were 95% of ARBs who availed the capacity development training while none among the Non-ARBs did. In terms of

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credit/microfinance assistance, only 4% among the ARBs benefitted from these and 38% from farm tools/equipment. Furthermore, ARBs (69%) received seeds, fertilizers and cash assistance while Non-ARBs reportedly did not. With their income, the majority of these two groups earned above ₱10,000 per month even before CARP implementation as shown by the 35% of ARBs and 64% of Non-ARBs which remained unchanged in 2023.

The data on the predominance of older age groups among both ARBs and Non-ARBs implies an aging farming population which may impact the sustainability and productivity in agriculture. More so, the low educational attainment may also cause the limitations of the respondents' access to technical farming knowledge or modern agricultural practices. This can consequently affect their productivity and capacity to innovate in farming business. The differing in the availment of support services in capacity development training and farm inputs also implies that there were more advantages among the ARBs over Non-ARBs because of their eligibility for CARP interventions. Despite this result, the lack of significant income increase from 2017 to 2023 may indicate that the support services did not lead to substantial economic gains which could be due to the aging farmers and their poor health and their limited access to markets.

These findings are in consonance with the study of Reyes et al. (2013) who found that CARP improved the access of ARBS to support services but the clear data on the limited increase in productivity and income was due to the insufficient follow-through and aging beneficiaries as implementation gaps. Thus, this study reinforces the continuous post land distribution support to improve the farming gains.

Objectives, Indicators and Implementation Processes of Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP) as Evaluated

Table 3 shows how the Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP) aims to improve and ensure the long-term success in farming. The Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP) follows this process (a). Supervision and Management for Effective Delivery of Support Services, Conduct of IT-Enabled Maturity Assessment (ITEMA) to measure the level of maturity of Agrarian Reform Beneficiaries Organizations (ARBOs). (b)Sustainability Monitoring of Infrastructure previously completed and turned over to LGUs for maintenance.

Table 3 Objectives, Indicators and Implementation Process of CARP Programs

Objectives →	Indicators →	Implementation Process
Capacitate ARBs through Trainings, and provide access to basic social services on tools/ equipment and microfinance to make their land productive	3,357 ARBs trained on various on capacity trainings 29 ARBs provided with tools/equipment and facilities 719 ARBs with access to credit and microfinance services	Supervision and Management for Effective Delivery of Support Services; Sustainability Monitoring of Infrastructure previously completed and turned over to LGUs for maintenance; Supervision, Management and Monitoring and Evaluation

From 2017 to 2018, the ARBDSP employees have facilitated workshop that trained 3,357 ARBs to equip them with important skills to enhance farming practices. Additionally, there were 29 ARBs who received tools and equipment, while 719 ARBs were given access credit and microfinance services for capital assistance. The training and resources offered by the ARBDSP implied that there was an improvement in the productivity and sustainability of ARBs' farming activities hence after. The provision of some technical farming skills and financial support among the farmers encouraged them for more production and achieved higher economic results.

The importance of support system and its benefits were also highlighted by Suryani et al. (2022). The authors claimed the importance and benefits to the farmers of creating innovation and building networking through

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establishing partnerships among the local entrepreneurs. In the same manner, this CARP program on the sustainability of the land produce among the ARBs has effectively boosted the productivity and sustainability of Agrarian Reform program with all the trainings and resources provided.

During the interview, some concerns of ARBs regarding the ARBDSP were mentioned. Several issues, including insufficient access to seeds, fertilizers, and other farm inputs; poor irrigation systems; inadequate post-harvest facilities; and a lack of farm-to-market roads were cited. They also reported limited knowledge or access to modern farming technologies and practices. For the ARBDSP Division, some challenges include conflicts in training schedules and activities for the ARBs, unavailability of resource speakers for capacity development activities, and difficulties in communication or accessibility with ARBs in areas with low mobile signals. Additionally, the downloading of funds from DARRO/DARCO during the last quarter of the year leads to an increase in balances and low fund utilization. Delays in responses from LGUs for conducting Small and Medium Enterprise (SME) activities and the unavailability of the SME Inspectorate Team were also identified as issues. Some recommendations for the ARBDSP Division include providing additional seeds and fertilizers, especially during calamities when supplies are scarce; offering training, tools, equipment, and cash assistance; and improving irrigation facilities, water pumps, and farm-to-market roads. It is also recommended to strengthen relationships and partnerships with other line agencies and LGUs, mobilize useful knowledge and skills through benchmarking, and establish harmonious relationships and linkages with private sectors.

Program Components, Implementation Processes and Their Causal Links to Impact

The ARBDSP aimed to improve Agrarian Reform Beneficiaries' (ARBs) access to essential services, resources, and training to strengthen their farming skills and economic stability.

Table 4. Project Components-Impact Pathway Causal Links of ARBDSP

Components	Causal Links
Objectives ↓	Program objectives guide the selection of activities that are intended to build the capacities of ARBs to enhance their access to services, and improve their overall well-being.
Activities ↓	Training and resource provision capacitated ARBs which in turn enables them to become better in their farming practices and productivity. Access to credit and resources facilitates bigger investment in farm activities.
Outputs ↓	Trained ARBs apply acquired new skills and knowledge for more efficient and productive farm operations. Equipment and infrastructure support enhance ARBs capacity to farm effectively.
Outcomes ↓	Enhanced farming capacity and access to services for more efficient farm management, higher productivity, and better livelihood produce.
Impact	Improved access to social services, livelihood and productivity among the ARBs. Increased self-reliance and better integration into the farming methods for better agricultural economy. ARBs show higher productivity and economic stability. Enhanced agricultural produce and sustainability

As results of the capacity trainings conducted, the program has trained 174% or 3,357 out of 1,929 of the planned ARBs that has a significant mark surpassing the initial target. 29 out of 23 or 124% of the target recipients were also being provided with technical and equipment support. Through the program, it has extended assistance to 719 out of 520 or 138% of ARBs to attain access credit and microfinance for wider financial assistance.

The ARBDSP has effectively boosted ARBs' skills and access to resources as one of the causal links that significantly improved their productivity and economic well-being. Furthermore, another causal link that enabled the program achieved its impact on the farmers is the ability to exceed economic targets through the

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acquisition of the skills from the trainings conducted, lending or micro financing and the provision of the infrastructures that improved their productivity rates and better livelihood.

These efforts show the impact of the program that led to enhance farm management, increased productivity, and better livelihoods for ARBs which eventually lead to sustainable agricultural practices, greater self-reliance and sustainable agricultural development. This ultimately augmented the quality of life among the farmers.

One of the struggles of the farmers when accessing support as revealed by Terblanche (2015) is that financial support organizations only reach a few numbers of farmers. In contrast, the ARBDSP along the successful upscaling of the farming skills. The program has opened resource access for Agrarian Reform Beneficiaries (ARBs) unlike those service providers who according to Terblanche (2015) catered limited farmers only. Thus, it is fair to claim that the ARBDSP showed positive impact and exceeded its targets on sustainable agriculture and on improving the quality of lives among ARBs.

Socio-Economic Impact of DAR-Implemented Programs on the Productivity and Social Services of ARBs and Non-ARBs

The socio-economic impact of program implemented by the DAR on the productivity of the ARBs compared to non-ARBs determines the effectiveness of the program. Beyond mere land ownership, the impact of DAR programs also covers the socio-economic that affect the productivity for both Agrarian Reform Beneficiaries (ARBs) and Non-ARBs. The effectiveness of the Comprehensive Agrarian Reform Program (CARP) in enhancing the livelihoods is also dependent upon various factors. The data presented in Table 5 shows the income productivity of ARBs (Agrarian Reform Beneficiaries) and Non-ARBs from 2017 to 2023.

Table 5. ARBs and non-ARBs Productivity (Income) with DiD Analysis

Variables	**ARBS**				**Non-ARBs**			
	Before	**After**	**Diff**	**%**	**Before**	**After**	**Diff**	**%**
Average Monthly Net Income (in peso)	11,899.94	13,193.55	1,293.61	10%	15,719.19	17,326.66	1,607.47	9.27%
Average Cultivating Land size (in ha)	1.9381	1.9381	1.9381		1.6394	1.6394	1.6394	
Productivity (in peso) (Average monthly net income/Average Land size)	6,140.00	6,807.47	667.47	10%	9,588.38	10,568.90	980.52	9.27%

Net change= (Change in ARBs-Change in non-ARBs)

Net change=10% - 9.27%= 0.73%

Counterfactual Value (Productivity) = (Y1-Y0)-(X1-X0)

= (6,807.47- 6,140.00)- (10,568.90- 9580.38)

= -313.05

*** Counterfactual Value= -5% (-313.05 / 6,140.00)

There is a decrease of an average of -5% without the intervention.

Table 5 displays the ARBs and non-ARBs Productivity Income where between 2017 and 2023, both groups experienced increases in income and productivity as shown by the average monthly net income of ARBs that rose from ₱11,899.94 to ₱13,193.55 or an increase of ₱1,293.61 or 10%. Likewise, non-ARBs had an income rise from ₱15,719.19 to ₱17,326.66 that is a larger nominal increase of ₱1,607.47 that corresponds to 9.27% a slightly lower growth rate. Significantly, these positive income gains were achieved without changes in the average of land size in a constant size of at 1.9381 hectares for ARBs and 1.6394 hectares for non-ARBs.

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Given these unchanged land sizes in both groups, the productivity per hectare is a clearer picture of farming efficiency where ARBs improved from ₱6,140.00 to ₱6,807.47 per hectare or a gain of ₱667.47 or 10%. In comparison, non-ARBs increased from ₱9,588.38 to ₱10,568.90 that is equivalent to a gain of ₱980.52 or 9.27%. It is also significant to note that there is a slightly higher growth rate among the ARBs of 0.73% over non-ARBs as indicated by the Difference-in-Differences (DiD) analysis.

Despite this observed slight gain, the counterfactual value reveals an important distinction had ARBs followed the same income growth trajectory as non-ARBs. This would have made their production a ₱313.05 higher than what was actually observed. Thus, this negative counterfactual value implies that interventions targeted at the ARBS may not entirely attributed on their productivity increase and that external factors, the quality and the effectiveness of these interventions did not deliver optimal outcomes.

These findings are related to the existing literature on agrarian reform outcomes in the Philippines that concluded that the Comprehensive Agrarian Reform Program (CARP) and its support services brought significant improvements in income among the ARBS but were still not sufficient to match or exceed those of the non-ARBs (Briones, 2018).

Table 6 Access Social Services Availed with DiD Analysis

Indicators	ARBs		DiD	Non-ARBs		DiD
	2017	2023		2017	2023	
Capacity Development/Trainings	40%	55%	+5%	35%	45%	+2%
Credit/Microfinance Assistance	25%	35%	+2%	20%	28%	+2%
Farm Tools/Equipment	30%	35%	+2%	25%	28%	+2%
Others (seeds, Fertilizer)	15%	19%	+2%	10%	12%	+2%

The data also showed in Table 6 that the access to credit and microfinance assistance brought advances to those who grew their credit score from 25% in 2017 to 35% in 2023. Non-ARBs showed a 3% rise 20% to 28% only. The study computed a DiD +2% for both groups. This figure can be correlated to the efforts of the programs in providing financial support to facilitate farmers' agricultural investments, improve their economic stability and strengthen their capacity to establish business linkages as part of the benefits of the program. In addition, the ARBs also showed higher access to farm tools and equipment that reached 5% from 30% to 35% than non-ARBs with a slight rise from 25% to 28% with a DiD of +2% in both groups. However, these results could also imply that ARBs were in a more advantageous side in receiving more support in farm resources as indicated by their higher crop yields because of this higher access.

Similar to these findings, the ARBS claimed during the focus group discussion, that they benefit from various government agrarian support services to achieve sustainable farming practices with NGOs collaboration. A huge number of ARBs stated that they have the access to low-interest loans from government institutions like the Land Bank of the Philippines. Apparently, they also disclose that this support service may have been beneficial if not hindered by delays and system inefficiency, and limited funding. In contrast, big landowners non-ARBs have their private support services through their access to agribusinesses that were less affected by organizational barriers. This makes the choice of lending companies more flexible in terms of choosing financial services.

Similarly, the result of Ballesteros et al., 2018 on the impact of support services was also minimal. The evidence of CARP's impact on credit access has also been disappointing. While ARBs have shown improved access to credit, mainly due to the presence of government programs, access to formal credit markets has been hampered by the existing legal restrictions on transfers (i.e., sale or mortgage) of awarded lands as well as concerns about the indefeasibility of land reform titles due to the existence of collective titles and the possible cancellation of DAR issued titles (WB 2009). ARBs have remained dependent on informal credit sources.

However, Tadem 2015; Frufonga et al., 2016 found that many cases in agrarian reform beneficiaries receive inadequate support services such as access to credit, technical training, and infrastructure. This hampers their ability to optimize their agricultural activities and improve their livelihoods. According to Modern Growth

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Theory Nelson 1990, the role of human capital includes knowledge, skills, and education, in driving economic growth.

It is important for ARBs to maximize the benefits from their lands. However, problems relating to its implementation must be addressed by concerned agencies to reap the full benefits of the support services intended for ARBs (Mercado et.al 2021).

There is a need for the government to improve the services of the DAR, DA, and other agencies or stakeholders, in terms of technical assistance. In addition, subsidies for high yield varieties of rice and farm related inputs and stakeholder engagement will promote good governance principles such as accountability, responsiveness, participation, effectiveness and efficiency, equity and inclusiveness in governance (Stakeholder Theory Mambolo,2018). Likewise, credit marketing and government services should be expanded and made accessible. Moreover, infrastructure support like solar and mechanical rice drier and additional farm to well market roads should be extended to farming communities. Furthermore, well-organized and stabilized irrigation system must be constructed for the farmer beneficiaries to increase production.

The disparity in terms of income among the two groups can be due to their access to land, farming resources, government support and assistance and individual productivity capacity. ARBs have shown some degree of difference because they were granted land titles and land ownership. They were able to use this as a form of bank collateral in accessing loans for additional farm funds. This privilege gradually augmented their farm yields and earnings. Aside from this funding, government programs that provided them education, technological access, and farming supplies like seeds and fertilizer are factors that bring them to their advantage. Expectedly, these contributed to a rise in farming productivity earnings because the ARBs were able to acquire if not, exchange equipment with others. They also had access to bigger markets thru their cooperative memberships, thus increasing their revenues.

Although, many ARBs were entitled to government support as claimed by many during the interviews, several respondents declared that frequently they did not receive the entire range of services as promised. Many were still struggling in the middle of restricted access to credits and inadequate infrastructure such as poor road network. This resulted to their failure to reach lucrative markets. Another factor that was cited by the respondents was their limited knowledge in pricing and thus rely on meddle men or intermediaries that lowered their profit margins at most times.

Although not significant, there was still a difference in the income between the two groups. During the interviews, few number of non-ARBs, particularly landowners have revealed a bigger control over what crops to grow. Thus, without the agricultural supplies from the government, they themselves can determine which crops to raise and how to manage their farms. A few of those non-ARBs who can afford to invest in better farm equipment and have more knowledge in contemporary farming techniques resulted to an increased income. These non-ARBs were more focused on cash crops on huge scale that enabled them to potentially earn higher income than ARBs whose focus was face crops or individual or community consumption due to the limits by the government rules.

Generally, it could be further implied that the land ownership and government assistance enabled the ARBs to increase their income but still many of them experience difficulties with funds, agriculture education, market access, and unfulfilled support. Although some wealthy non-ARBS showed financial capacity with their private investment, many smallholders non-ARBs were frequently found to have lower and more unstable income.

Difference on the Socio-economic Indicators between the Beneficiaries with land titles (ARBs) and those without land titles (Non ARBs)

Test of Difference between ARB and Non-ARB

(CARP) on Agrarian Reform Beneficiaries (ARBs) and Non-ARBs in Camarines Sur requires a careful analysis to fully capture the whole scenario. Using the Mann-Whitney U test, the study was able to treat the data on various indicators to determine possible significant differences that exist between these two groups.

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Table 7 displayed the results of the Wilcoxon signed-rank test conducted to compare the monthly incomes of Agrarian Reform Beneficiaries (ARBs) during the pre and post implementation of the Comprehensive Agrarian Reform Program (CARP). Thus, the table yields a Wilcoxon W statistic of 0.00 with a p-value less than 0.0001. This extremely low p-value (< 0.0001) is an implication of a statistically significant difference between the pre and post incomes monthly of ARBs which further implies that CARP has had a significant impact on their earnings. In other words, the significant increase in ARBs' monthly income during the post-CARP reveals the positive influence of the program on the economic well-being of the ARBs. This means that the program has been successful with its goals on enhancing the productivity and income through the redistribution of lands among the landless farmers as the program recipient.

Table 7 Paired Test: ARBs and non-ARBs Monthly Income Before and After (2017 vs 2023) CARP Implementation

Paired Samples Test				
			Statistic	**P**
ARB Monthly Income 2017	ARB Monthly Income 2023	Wilcoxon W	0.00	< .0001
non-ARB Monthly Income 2017	non-ARB Monthly Income 2023	Wilcoxon W	0.00	< .0001
Descriptive				
	N	**Mean**	**Median**	**SD**	**SE**
ARB Monthly Income 2017	100	11900	6099	12990	1299
ARB Monthly Income 2023	100	13194	6750	14419	1442
Non-ARB Monthly Income 2017	70	15719	15117	11340	1355
Non-ARB Monthly Income 2023	70	17327	16667	12506	1495

These findings have significant alignment with earlier studies that show that agrarian reform can enhance the incomes of the program beneficiaries. As a matter of fact, Reyes (2002) discovered that agrarian reform have contributed to the increase in incomes per capita and a reduction in the poverty rates among those who are affected. In a similar study, Galang (2021) also found that those who received the Certificates of Land Ownership Award exhibited higher loan grants which means that they had improved access to credit for higher investments in agricultural ventures to boost income. The Theory of Change as articulated by Arjomand (2004) argues that these structural interventions foster socio-economic advancements through its transformation of the fundamental conditions. This way, the program can sustain alleviation of poverty and inequality. In summary, this evidence hold CARP with its positive influences on the monthly incomes of ARBs that corroborated with both the empirical findings and theoretical perspectives that support the CARP land redistribution as a strategic way to enhance the socio-economic conditions of the Filipino farmers.

The table is a dataset that comprised the 100 Agrarian Reform Beneficiaries (ARBs) where the study assessed the changes in their monthly income between 2017 and 2023. As displayed by the table, in 2017, the mean monthly income was ₱11,900, with a median of ₱6,099 and a standard deviation (SD) of ₱12,990. On 2023, the mean monthly income had risen to ₱13,194, with a median of ₱6,750 and an SD of ₱14,419. The standard errors (SE) for 2017 and 2023 were ₱1,299 and ₱1,442, respectively. The increase in the mean of the monthly income from ₱11,900 in 2017 to ₱13,194 in 2023 is an implication of the positive trend in the earnings of ARBs given this period but the median values (₱6,099 in 2017 and ₱6,750 in 2023) were lower than the means. These data are indicative of a right-skewed income distribution where a subset of ARBs earns significantly higher incomes which elevate the mean. In addition, the increase in the standard deviation from ₱12,990 to ₱14,419 implies of the growing income variability among ARBs. It is also significant to note that the standard errors in an indication of the precision of the mean estimates with is values of ₱1,299 for 2017 and ₱1,442 for 2023.

In line with these observed increase in mean monthly income, it can be generally implied that ARBs have experienced income growth between 2017 and 2023 but the modest rise in the median income and the increase in the income variability indicates that this growth has no uniform distribution among all beneficiaries. Simply, this means that a small group of ARBs as covered by the study are the ones who may have achieved the

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substantial increase in the incomes and that the majority saw only the marginal improvements. This non - uniformity of increase distribution may also imply of struggles associated with the land redistribution. As studied by Adamopoulos and Restuccia (2020), it was observed that the Comprehensive Agrarian Reform Program (CARP) has led to a reduction in farm sizes which led to a 17% decline in agricultural productivity. Thus, although there is some increase in the income levels to some number of beneficiaries, some of these farmers may be adversely affected in terms of their overall productivity. These uneven distribution of these gains increases highlights the need to implement support mechanisms along the land redistribution to achieve holistic, equitable and sustainable economic development among the Filipino farmers.

As presented, Table 7 shows the Wilcoxon signed-rank test conducted to assess the change in monthly income among Non-Agrarian Reform Beneficiaries (Non-ARBs) between 2017 and 2023. It could be seen that the test yielded a test statistic (Wilcoxon W) of 0.00 along with a p-value of less than 0.0001. This result means that there is statistically significant difference in monthly incomes over the specified period covered by the study.

Consequently, the significant result from the Wilcoxon signed-rank test is an implication that the monthly incomes of non-ARBs has had notable change between 2017 and 2023. The p-value of less than 0.0001 means that there was no difference in the monthly incomes between the two time points.

These results imply that other factors may have influenced the income dynamics of non-ARBs within this time frame aside from the Comprehensive Agrarian Reform Program (CARP). Nevertheless, it can be deemed that the increase in monthly incomes among non-ARBs could be attributed to other factors. The economic growth, market dynamics or access to alternative income sources can be considered as external contributory factors that may have influenced the income status. The complexity of rural income structures may contribute to the struggles of the ARBs with their incomes while the non-beneficiaries experienced the income improvements with the mechanisms, they availed outside of land redistribution programs.

These implications are similar to the findings of Lanzona (2019) who noted that the benefits of agrarian reform programs may not be uniform under the conservative or old demarcations set by regulations of the program. More so, both incomes of ARBs and Non-ARBs can change due to various socio-economic factors.

The table showcases the monthly income statistics for Non-Agrarian Reform Beneficiaries (Non-ARBs) during the before and after the implementation of the Comprehensive Agrarian Reform Program (CARP). As shown, in 2017, the mean monthly income was ₱15,719, with a median of ₱15,117, a standard deviation (SD) of ₱11,340, and a standard error (SE) of ₱1,355. On 2023, these figures had risen to a mean of ₱17,327, a median of ₱16,667, an SD of ₱12,506, and an SE of ₱1,495.

The data presented indicates an increase in both mean and median in the monthly incomes for Non-ARBs over the six-year period covered. The mean income that rose by ₱1,608, that is approximately 10.2% and the median income that increased by ₱1,550 corresponds to approximately 10.2%. The standard deviation also grew and slightly increased in the variability of the income among the Non-ARBs. This observed income growth between 2017 and 2023 confirms that factors other than direct land ownership under CARP may have contributed to the economic improvement among the non-ARBs. This growth can be traced to their employment of better farming techniques, market conditions, or more alternative income sources.

The study of Gordoncillo (2012) noted that these improvements cannot be attributed solely to CARP since it is complex with its various influential factors. Thus, the income increases among non-ARBs as discovered by this study may be the result from multiple variables that are beyond the scope of this agrarian reform. It is needless to say that income growth as observed among the non-ARBs is an indicator that economic improvements can occur through alternative pathways. This may have resulted in having better access to markets, higher credits or upgraded technological advancements. Overall, to optimize rural development, the multiple factors that contribute to the economic progress must be implemented in a holistic approach.

In summary, the Focus Group Discussion (FGD) revealed that land titles registered and awarded to ARBs have enabled them to use access finance supports which improved their crop production and livelihoods as a whole. Legal ownership of lands allowed ARBs to cultivate and nurture their crops without rental fees or shared profits

with landlords, thus increasing their quality of life. Also, CARP has been a contributory part in the increased social mobility among the farmers which in turn provided them a sense of empowerment and control over their lives that led to higher level quality of life.

Issues and concerns still were seen when problems in the delays of land transfer, internal organizational conflicts and limited support services from the government. More so, the lack of necessary farm support infrastructure in irrigation, have affected the productivity potential of the crops grown. Thus, the problem in poverty was not fully addressed since some ARBs lack access to capital to obtain seeds, necessary equipment, and appropriate fertilizers. These extra resources can promise to raise the poor out from the poverty.

To summarize, ARBs profited significantly more from than their non-ARBs counterpart in the CARP to improve the quality of their lives and social capital. However, it must be stated that the amount of these benefits was realized and determined by the efficacy of CARP implementation in the context of the local farmers.

Recommendation for possible enhancement of DAR Programs

During the interview with the ARBs, they mentioned several issues, including insufficient access to seeds, fertilizers, and other farm inputs; poor irrigation systems; inadequate post-harvest facilities; and a lack of farm-to-market roads. They also reported limited knowledge of or access to modern farming technologies and practices. For the ARBDSP Division, some challenges include conflicts in training schedules and activities for the ARBs, unavailability of resource speakers for capacity development activities, and difficulties in communication or accessibility with ARBs in areas with low mobile signals. Additionally, the downloading of funds from DARRO/DARCO during the last quarter of the year caused an increase in balances and low fund utilization. Some recommendations for the ARBDSP Division include providing additional seeds and fertilizers, especially during calamities when supplies are scarce; offering training, tools, equipment, and cash assistance; and improving irrigation facilities, water pumps, and farm-to-market roads. It is also recommended to strengthen relationships and partnerships with other line agencies and LGUs, mobilize useful knowledge and skills through benchmarking, and establish harmonious relationships and linkages with private sectors. Overall, the ARBs have shown a greater impact of the CARP primarily due to the structured nature of the department in implementing agrarian reforms. In contrast, the non-ARBs, particularly small-scale farmers, exhibited a higher reliance on informal and localized networks and demonstrated a greater need to secure large-scale resources and support from the government and other stakeholders.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the findings which were used as bases in drawing conclusions. Recommendations are also given in order to establish possible undertakings by the CARP's to sustain institutional and socio-economic aspects of the ARBs and Non-ARBs as well as its projects/programs.

This study was conducted in five municipalities within the 2nd District of Camarines Sur, covering 21 barangays in Libmanan, Minalabac, San Fernando, Pamplona, and Pasacao. These areas were chosen for their active participation in the Comprehensive Agrarian Reform Program (CARP). A total of 170 respondents were selected, between 100 Agrarian Reform Beneficiaries (ARBs) and 70 Non-Agrarian Reform Beneficiaries (Non-ARBs). The study focused on ARBs awarded individual land titles under CARP between 2017 and 2018, with landholdings of at least one hectare, ensuring comparability between the two groups.

Summary

The demographic and socio-economic profile of respondents showed the distinct differences between Agrarian Reform Beneficiaries (ARBs) and Non-ARBs where a majority of ARBs (55%) and a significant portion of Non-ARBs (33%) fall within the 60–70 age range and were both dominated by males particularly among Non-ARBs (61%) and were married (83%).

In terms of educational attainment, the study found a generally low level of formal education among the ARBS with 39% of ARBs and 29% among the Non-ARBs who only completed elementary education. Household size

also differs with the 83% of Non-ARBs and 49% ARBS live in households with five to eight. The health-related issues were more commonly reported among the ARBs with 46% while Non-ARBs had 33%. Both groups cultivate approximately one hectare of land (59% of ARBs, 78% of Non-ARBs) where a notable disparity is observed in each access to development training and support services. The 95% among the ARBS is an overwhelming number who participated in capacity development training where none of the Non-ARBs reported related experiences. Only 4% of ARBS received credit or microfinance assistance, 38% of them benefited from farm tools or equipment, 69% received seeds, fertilizers, and cash assistance and support that Non-ARBs reportedly did not receive at all. With regards to income, most of the ARBs (35%) and a higher percentage of Non-ARBs (64%) gained more than ₱10,000 per month prior to the implementation of the Comprehensive Agrarian Reform Program (CARP). This data remained unchanged until 2023.

The study also found out that between 2017 and 2018, the Agrarian Reform Beneficiaries Development and Sustainability Program (ARBDSP) rolled out key interventions such as training workshops. These intervention implementations equipped 3,357 ARBs with essential farming skills which exceeded the original target of 1,929 trainees that corresponded to 174% achievement. In addition to this, 29 ARBs received farm tools and equipment that also surpassed the target of 23 or 124% achievement and 719 ARBs gained credit and microfinance services access that went above the goal of 520 and is equivalent to 138% achievement. Indeed, these program components were designed to improve productivity and sustainability with the implementation of technical trainings and provision of financial support.

The study also conducted a Difference-in-Differences (DiD) analysis where it discovered that ARBs and Non-ARBs experienced income growth from 2017 to 2023. More specifically, the ARBs saw their average monthly net income that rose from ₱11,899.94 to ₱13,193.55 that is equivalent to a 10% increase or ₱1,293.61. On the other hand, Non-ARBs had a 9.27% increase from ₱15,719.19 to ₱17,326.66, or ₱1,607.47. Between these data, Non-ARBs had higher nominal income gains while ARBs had only a slight growth rate, that is, 10% vs. 9.27% that resulted to a DiD estimate of +0.73%. In terms of productivity, incomes of ARBs increased from ₱6,140.00 to ₱6,807.47 (₱667.47 or 10%) and Non-ARBs' rose from ₱9,588.38 to ₱10,568.90 (₱980.52 or 9.27%) per hectare. Despite the benefits discovered among ARBs, there was a counterfactual estimate that indicated they could have earned more to ₱313.05 if they had followed the same growth path as Non-ARBs. Furthermore, the access to social services also improved more significantly among the ARBs. This is shown by the access to credit and microfinance that increased from 25% to 35% as compared to a smaller increase among the Non-ARBs from 20% to 28%. These data yielded a DiD of +2%. Lastly, the access to farm tools and equipment also increased from 30% to 35% for ARBs, Non-ARBs had an increase from 25% to 28% that resulted again to a DiD of +2%.

During the focus group discussions, the study confirmed the receipts of ARBs of the support services which were often facilitated through collaborations between government agencies and NGOs. The respondents also reported that they were given a prioritized access to low-interest loans from the Land Bank of the Philippines and other lending institutions. However, they also relayed some persistent challenges in the bureaucratic delays and some system inefficiencies. On the other hand, the large landowners among the Non-ARBs relied on private sectors for support in their agribusiness which they declared to have more flexible and timely financing. Finally, to statistically assess socio-economic differences, the study employed the Mann-Whitney U and Wilcoxon signed-rank tests that showed a Wilcoxon W statistic of 0.00 and a p-value of less than 0.0001 in the comparison of monthly income of ARBs before and after CARP.

Conclusion

The study confirmed the demographic and socio-economic disparities between ARBs and Non-ARBs. Most ARBs were elderly males with lower educational attainment thriving in larger household sizes which indicates that ARBs were more socio-economically vulnerable group compared to non-ARBs. Additionally, since the ARBs reported a higher incidence of health-related issues than non-ARBs means that their socio-economic vulnerabilities may extend to health concerns that can impose potential negative impact on their productivity and quality of life. With almost the same land average to a hectare, both ARBs and Non-ARBs showed that there is a common baseline in land utilization but their access to agricultural inputs and services are significantly different.

Furthermore, the study concluded that the disparity in access to development support as shown by the 95% of ARBs who received trainings and various forms of assistance and none among the non-ARBs received the same reflects the level of effectiveness of these government interventions for ARBs. Moreover, despite this provision of support, ARBs still had a lower monthly income than non-ARBs before and after the CARP which further indicates that CARP did not fully close the income gap between the two groups. Although the ARBDSP exceeded its targets in equipping the farmers with trainings, tools and microfinance access, these government interventions must still work further to be highly effective in equipping ARBs with more productive resources and skills.

The DiD results where ARBs experienced a 10% income growth that slightly surpassed the non-ARBs' 9.27% but still keep the actual lower monetary increase, with the DiD of +0.73%. The study concluded that the interventions yielded positive results but have limited returns for ARBs compared to non-ARBs. Despite the data showing the increase among the ARBs reaching a 10% that apparently is similar to non-ARBs (9.27%), this remained behind in absolute income per hectare. Thus, it is concluded that the support programs improved ARBs' productivity but completely overcome the productivity gap. Thus, the DiD revealed that had the ARBs earned ₱313.05 more per month, they could have followed the same income growth trend of the non-ARBs. This data is an implication that despite intervention efforts, ARBs still need more support to reach their full income potential.

It is not only the greater access gained by ARBs to credit and microfinance compared to non-ARB impacts their economic capacity. It is also their access to farm tools and equipment that rose modestly which outpaced the non-ARBs that is a positive shift in resource availability from the government assistance. Although the ARBs confirmed being prioritized in support services through collaborations with government and NGOs, they still faced persistent bureaucratic and systemic challenges which undermined the efficiency and timeliness of these government interventions. Nevertheless, the reliance of the large owners among the non-ARBs on private sector in financing their agribusiness needs that is more flexible and timelier may suggest that these government support systems may be outperformed by the private sector in terms of responsiveness. Ultimately, the Wilcoxon signed-rank test confirmed a statistically significant increase in the income of ARBs after the implementation of CARP ($p < 0.0001$) which proved the measurable positive effects of the programs on their economic situation among the farmers in the Philippines.

Recommendation

Considering the findings and the conclusions of the study, the author recommends that the CARPs may use the results as springboard to widen its areas of progress and development. This study can also serve as a tool in evaluating their systems and other operations toward intended goal of DAR-CARPs. The management may also utilize the methodology used in this study to further assess the impact/outcomes before the implementation of plan project/s to attain higher sustainability specially in the area of health services and providers. The findings also can concretely assist them to design more energy saving infrastructures among the farmers through solar power source.

It is recommended also that the methodology used in this study be utilized by the government, non-government and other agencies that would want to analyze the outcomes-impact pathway and evaluate the projects/programs sustainability. Other interested researchers may utilize this study as a guide in evaluating project/program sustainability.

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APPENDICES

Appendix A

February 05, 2024

RICARDO C. GARCIA
OIC-PARPO II
Department of Agrarian Reform Program Office, Camarines Sur 1
HL Building Carnation St. Triangulo Naga City

Sir:

Greetings of peace!

The undersigned researcher is currently writing his thesis as a requirement for the degree of Master in Public Affairs major in Local Governance and Development, entitled "Impact Analysis of Comprehensive Agrarian Reform Programs (CARP) in the 2nd District, Camarines Sur, Philippines". This study aimed to evaluate the impact of Comprehensive Agrarian Reform Programs employing the impact pathway analysis. This will help you determine your efficiency and sustainability indicators in providing quality services to the Agrarian Reform Beneficiaries.

In this regard, I wish to ask your favorable permission to allow me gather the important information/data that would significantly help realize my study. Rest assured that all confidential data that you would entrust me will be kept and use only for the said study. I guaranteed you that I will apply all my knowledge and understanding in this study to figure out the appropriate findings.

I am hoping your affirmative response on this undertaking.

Thank you very much.

Respectfully yours,
TOMMY P. DESORO
MPAF Researcher

Noted:
DR. BERNADETTE G. GUMBA, CPA
Research Adviser

Approved:
MARIEL R. ESTRELLA, PhD
Dean, College of Integrated Arts and Humanities

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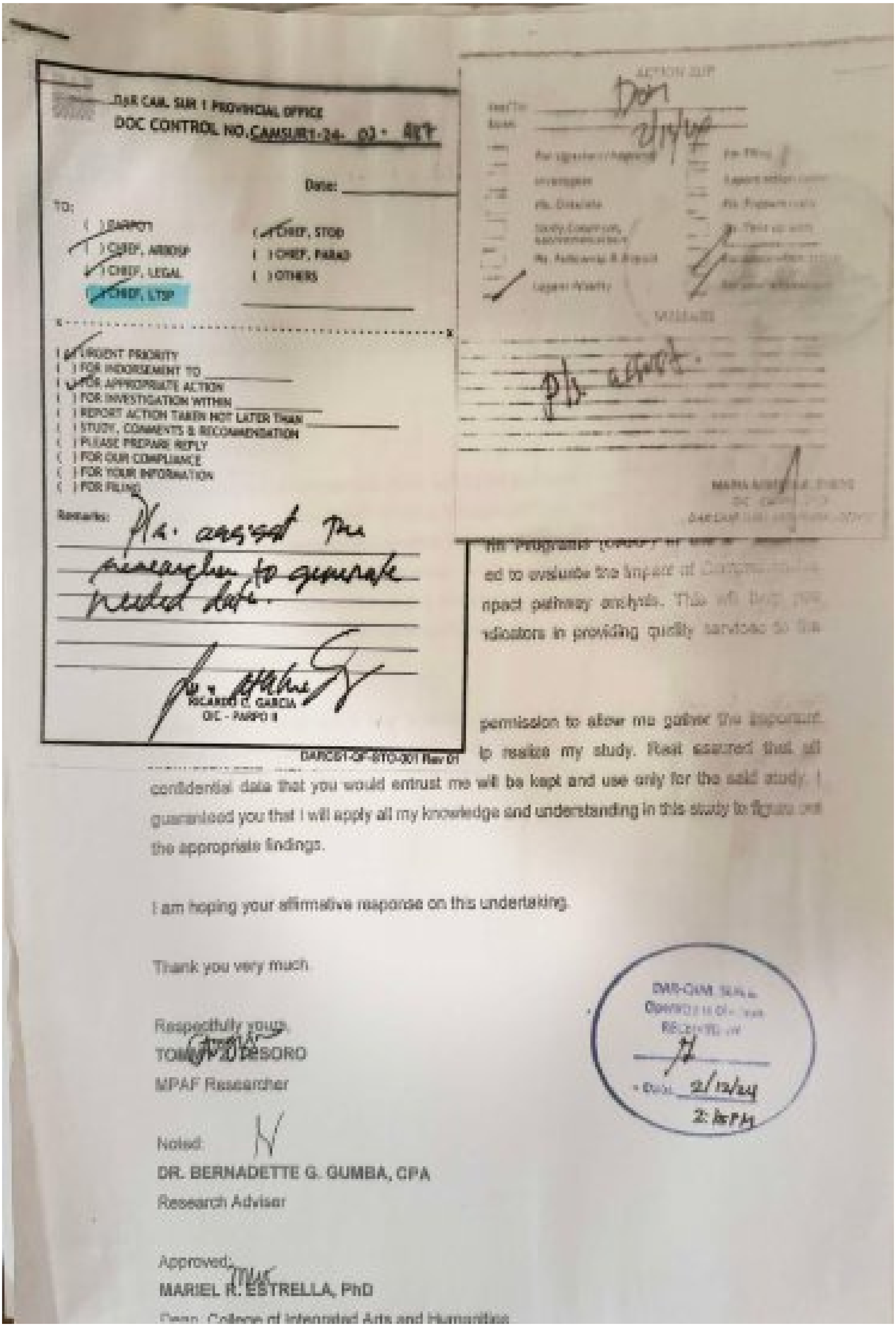
Letter to Conduct the Study



DAR CAM. SUR 1 PROVINCIAL OFFICE
DOC CONTROL NO.CAMSUR1-24- 03 - 887

Date: ______

TO:
( ) PARPO
(✓) CHIEF, ARBDSP
(✓) CHIEF, LEGAL
(✓) CHIEF, LTSP
(✓) CHIEF, STOD
( ) CHIEF, PARAD
( ) OTHERS

(✓) URGENT PRIORITY
( ) FOR INDORSEMENT TO
(✓) FOR APPROPRIATE ACTION
( ) FOR INVESTIGATION WITHIN
( ) REPORT ACTION TAKEN NOT LATER THAN
( ) STUDY, COMMENTS & RECOMMENDATION
( ) PLEASE PREPARE REPLY
( ) FOR OUR COMPLIANCE
( ) FOR YOUR INFORMATION
( ) FOR FILING

Remarks: Pls. assist the researcher to generate needed data.

RICARDO C. GARCIA
OIC - PARPO II

DARCS1-QF-STO-001 Rev 01

ACTION SLIP

Pls. attend.

ed to evaluate the impact of ...
npact pathway analysis. ...
ndicators in providing quality services to the ...

permission to allow me gather the important ... to realize my study. Rest assured that all confidential data that you would entrust me will be kept and use only for the said study. I guaranteed you that I will apply all my knowledge and understanding in this study to figure out the appropriate findings.

I am hoping your affirmative response on this undertaking.

Thank you very much.

Respectfully yours,
TOMMY D. TESORO
MPAF Researcher

Noted:
DR. BERNADETTE G. GUMBA, CPA
Research Adviser

Approved:
MARIEL R. ESTRELLA, PhD
Dean, College of Integrated Arts and Humanities

DAR-CAM. SUR I
RECEIVED BY
Date: 2/13/24
2:15PM

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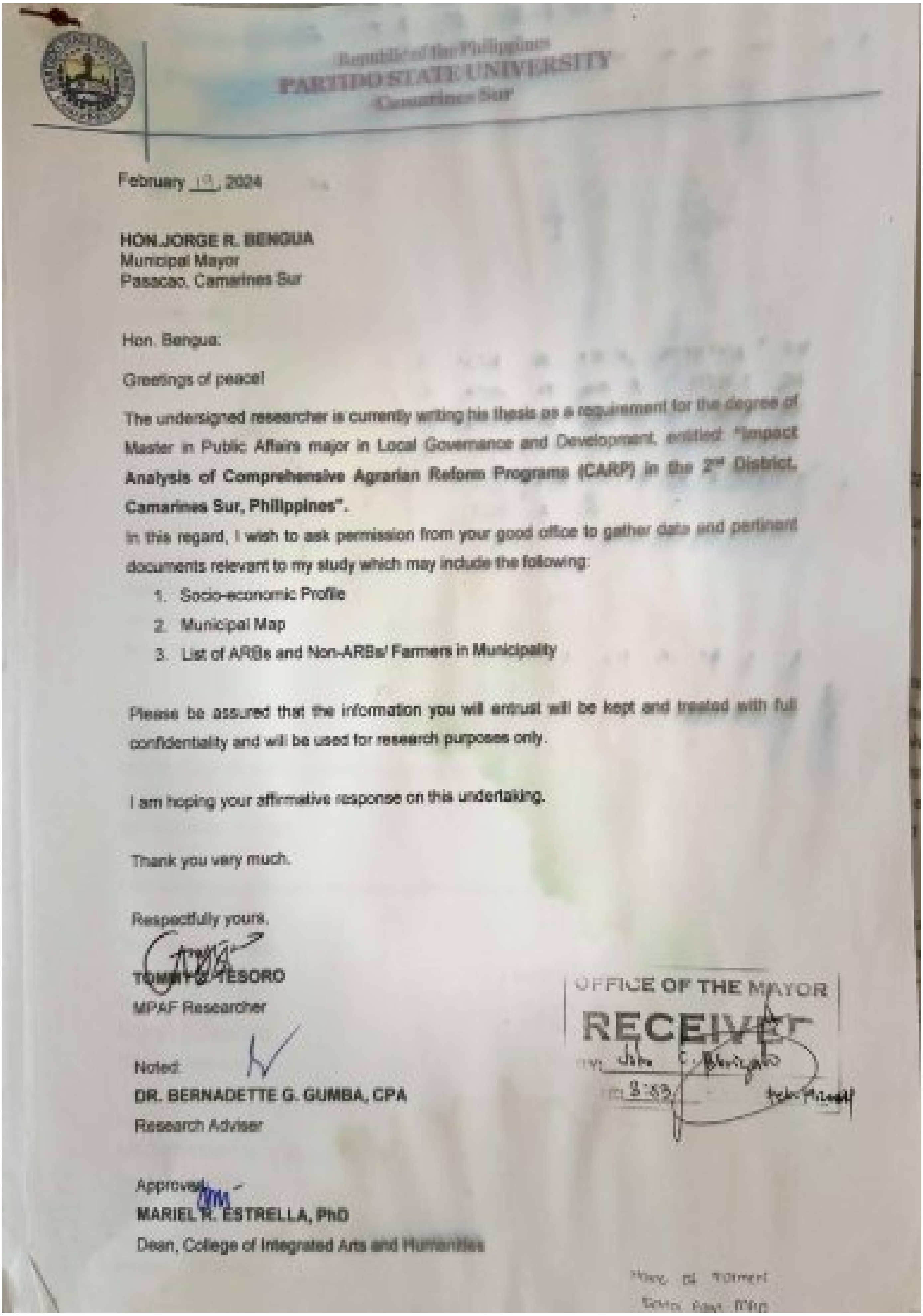

Republic of the Philippines
PARTIDO STATE UNIVERSITY
Camarines Sur

February 19, 2024

HON.JORGE R. BENGUA
Municipal Mayor
Pasacao, Camarines Sur

Hon. Bengua:

Greetings of peace!

The undersigned researcher is currently writing his thesis as a requirement for the degree of Master in Public Affairs major in Local Governance and Development, entitled: "**Impact Analysis of Comprehensive Agrarian Reform Programs (CARP) in the 2nd District, Camarines Sur, Philippines**".

In this regard, I wish to ask permission from your good office to gather data and pertinent documents relevant to my study which may include the following:

1. Socio-economic Profile
2. Municipal Map
3. List of ARBs and Non-ARBs/ Farmers in Municipality

Please be assured that the information you will entrust will be kept and treated with full confidentiality and will be used for research purposes only.

I am hoping your affirmative response on this undertaking.

Thank you very much.

Respectfully yours,

TOMMY C. TESORO
MPAF Researcher

Noted:
DR. BERNADETTE G. GUMBA, CPA
Research Adviser

Approved:
MARIEL R. ESTRELLA, PhD
Dean, College of Integrated Arts and Humanities

OFFICE OF THE MAYOR
RECEIVED

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Republic of the Philippines
PARTIDO STATE UNIVERSITY
Camarines Sur

February 21, 2024

HON. JESUS F. CAMARA
Municipal Mayor
Libmanan, Camarines Sur

Hon. Camara:

Greetings of peace!

The undersigned researcher is currently writing his thesis as a requirement for the degree of Master in Public Affairs major in Local Governance and Development entitled "Impact Analysis of Comprehensive Agrarian Reform Programs (CARP) in the 2nd District, Camarines Sur, Philippines".

In this regard, I wish to ask permission from your good office to gather data and pertinent documents relevant to my study which may include the following:

1. Socio-economic Profile
2. Municipal Map
3. List of ARBs and Non-ARBs/ Farmers in Municipality

Please be assured that the information you will entrust will be kept and treated with full confidentiality and will be used for research purposes only.

I am hoping your affirmative response on this undertaking.

Thank you very much.

Respectfully yours,

TONETT Z. TESORO
MPAF Researcher

Noted:
DR. BERNADETTE G. GUMBA, CPA
Research Adviser

Approved:
MARIEL R. ESTRELLA, PhD
Dean, College of Integrated Arts and Humanities

TO MPDC & MARO,
Please accommodate the request of this proponent for their research, for approval of Mayor Jes.

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Republic of the Philippines
PARTIDO STATE UNIVERSITY
Camarines Sur

February 16, 2024

OFFICE OF THE MAYOR
RECEIVED
Date: FEB 22 2024
OFFICE OF THE MAYOR

HON. DENNIS B. IMPERIAL
Municipal Mayor
Pamplona, Camarines Sur

Hon. Imperial:

Greetings of peace!

The undersigned researcher is currently writing his thesis as a requirement for the degree of Master in Public Affairs major in Local Governance and Development, entitled: **"Impact Analysis of Comprehensive Agrarian Reform Programs (CARP) in the 2nd District, Camarines Sur, Philippines".**

In this regard, I wish to ask permission from your good office to gather data and pertinent documents relevant to my study which may include the following:

1. Socio-economic Profile
2. Municipal Map
3. List of ARBs and Non-ARBs' Farmers in Municipality

Please be assured that the information you will entrust will be kept and treated with full confidentiality and will be used for research purposes only.

I am hoping your affirmative response on this undertaking.

Thank you very much.

Respectfully yours,

TOMMY L. TESORO
MPAF Researcher

Noted:

DR. BERNADETTE G. GUMBA, CPA
Research Adviser

Approved:

MARIEL R. ESTRELLA, PhD
Dean, College of Integrated Arts and Humanities

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Appendix B

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Documentation During the Survey

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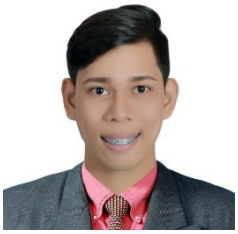
Appendix C



CURRICULUM VITAE

TOMMY Z. TESORO

Zone 6, Huyonhuyon, Tigaon Camarines Sur

tesorotommy5@gmail.com

PERSONAL INFORMATION

Date of Birth: June 29, 1995

Age: 29

Place of Birth: Tigaon Camarines Sur

Civil Status: Single

Religion: Roman Catholic

PROFESSIONAL QUALIFICATION

Licensure Examination for Teachers Passer

Computer System Servicing NC II Passer

EDUCATIONAL BACKGROUND

Graduate Studies Partido State University

Master in Public Affairs

Major in Local Governance and Development

May 2025

College Partido State University

Bachelor of arts in Political Science

March 2015

Vocational Course Teacher Certificate Program

Siena College Tigaon

2017

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WORK EXPERIENCE

April 2024-Present

Secondary Public-School Teacher

Huyonhuyon High School

Huyonhuyon Tigaon Camarines Sur

August 2021- February 2024

Monitoring and Evaluation Staff

Department of Agrarian Reform, Camarines Sur 1

Provincial Office, Naga City

June 2015- December 2020

Project Development Officer II

Community Empowerment Facilitator

Department of Social Welfare and Development

Region V

SEMINAR AND TRAINING ATTENDED

BLENDED TEACHING AND LEARNING USING OPEN EDUCATIONAL RESOURCES (OERs)

University of the Philippines (Massive Open Distance eLearning Course)

TRAINING ON QUALITATIVE AND QUANTITATIVE DATA ANALYSIS

Partido State University- School of Graduate Studies

ADVANCING SUSTAINABILITY AND INNOVATION THROUGH MULTIDISCIPLINARY APPROACH IN RESEARCH

Partido State University- School of Graduate Studies

TRAINING-SEMINAR ON STATISTICAL ANALYSIS IN RESEARCH

Partido State University- School of Graduate Studies

MUNICIPAL TRAINING WORKSHOP ON PEOPLE CENTERED RESILIENCE AND PARTICIPATORY DRRM-CCA

DSWD FO V- KALAHI CIDSS NCDDP