

# Impact Assessment of the Fish for Every Family Project in Occidental Mindoro, Philippines

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**Abstract** –*Fish for Every Family Project (FFEFP) is one of the initiatives of Plan International that responds to the issue of malnutrition among Filipino children. FFEFP aims to promote and develop backyard tilapia fish farming in Isabela, Mindoro Occidental, Southern Leyte, and Western Samar, Philippines. These are the areas in the country where malnutrition is commonly observed.*

*This study explores the adoption to The Fish for Every Family Project (FFEFP), and assesses its impacts in different levels. This impact assessment of FFEFP was conducted in Occidental Mindoro. The researchers used purposive sampling to touch base directly with a representative sample of the FFEFP beneficiaries in three out of four municipalities in Mindoro Occidental. The data were gathered through focus group discussions with the key officials in the area and some tilapia cage culture technology adopters. Key informant interviews (KIIs) of all project stakeholders were also conducted as well. In order to validate the information gathered from the respondents and to see the fish farms used, field visits and ocular inspection were made.*

*The study revealed that the FFEFP has various impacts to the beneficiaries, adopters, and replicators of tilapia. The impacts occurred at three levels: individual, family, and community. It was found out that the project was able to provide self-satisfaction among the beneficiaries and build stronger relationships among the members of the family and of the community.*

**Keywords:** fish farming, tilapia, malnutrition, protein, impact assessment

## INTRODUCTION

Malnutrition is a serious problem that is being faced by millions of Filipinos. Being malnourished means that a person does not have enough nutrients needed to have a healthy body. Poverty is the main cause of malnutrition. Those people who do not have enough resources are also those who are not able to eat the right kind of food they need to make their bodies healthy. Lack of money means lack of food and lack of food leads to malnutrition. This social issue primarily affects children.

Plan International [1] included the final report of the FFEFP stating that malnutrition in all its forms continues to afflict Filipino children in the rural areas. It said, among school age children, 7.4% suffer from moderate to severe malnutrition. Rural households generally have low incomes to support the family's basic needs, and their earnings are mainly sourced from agriculture since there are very few non-farm enterprises in their communities. Productivity of farms, rural enterprises, and coastal areas is very low due to a depleted resource base, poor or lack of

education and technical skills, lack of capital, and limited access to financial services. Malnutrition among children below the age of five has changed very little over the past 10 years, making it unlikely for the country to meet the Millennium Development Goal (MDG) of eradicating poverty and extreme hunger by 2015. "The reduction of child malnutrition has been alarmingly slow," Carin van der Hor, Country Director of Plan International and Convenor Organization of the Koalisyon Para Alagaan at Isalbang Nutrisyon (KAIN), said during the 2013 Hunger Summit organized by the National Nutritional Council (NNC). Children below five years old who are underweight remain at 20 percent while children who are below the average height-to-age ratio remain at 30 percent, Hor said citing National Nutrition Surveys as of 2011. Families who do not get the 100 percent dietary energy requirement even increased from 57 percent of the population in 2003 to 66.9 percent in 2008, the survey said [2].

One means for alleviating this problem is to increase the availability, affordability and

consumption of animal-source foods (ASFs), particularly fish, meat and eggs. ASFs are a key component in a balanced and nutritious diet for most people and inadequate supplies often result in malnutrition, especially among women and children. Sustaining and increasing fish consumption is important because of the protein they provide and the range and bioavailability of the nutrients that many fish species contain. Many types of fish, for example, have especially rich and bioavailable sources of calcium, zinc, iron and many vitamins [3].

In the Philippines, the fish industry accounts for 1.9% and 2.2% of the total Gross Domestic Product (GDP) at current and constant 2000 prices, and 14.7% and 19.3% at current and constant prices, respectively, of the Gross Value Added (GVA) by industry group. In Region IV-A where Occidental Mindoro is included, the municipal fish production recorded in 2011 is about 124,549.17 metric tons (MT). This was divided into marine (36,595.38 MT) and inland (87,953.79 MT) fisheries. The marine fish catch consisted of Frigate tuna (Tulingan), Big-eyed scad (Matang-baka), Roundcad (Galunggong), Indian sardines (Tamban), Indian mackerel (Alumahan), Anchovies (Dilis), Yellowfin tuna (Tambakol), Squid (Pusit), Fimbriated sardines (Tunsoy), Slip mouth (Sapsap) and others (including tilapia and bangus [4].

In responding to the issue of malnutrition, The Fish for Every Family Project (FFEFP) was designed. It aims to promote and develop backyard tilapia fish farming in Plan International program areas in Isabela, Mindoro Occidental, Southern Leyte, and Western Samar, Philippines and to provide additional food source that will address the protein requirements of malnourished children and other members of the family as well as provide additional source of income to household beneficiaries. The beneficiaries of FFEFP are the indigent families which have members suffering from malnutrition.

Projects and/or programs that aim to uplift the condition of Filipinos are of worthy to be assessed and evaluated. Aside from the fact that budget is provided for such programs and projects, it is also important to assess its impacts to the beneficiaries to see if the objectives are met and ensure that it really works towards the development of the people. These programs and projects are considered technology and they are assumed to work for social development. This means that technology transfer and adoption has to be looked into.

Technology has been recognized to play a critical role in spurring economic growth and development. President Truman (1949; 1964) stated that greater production is the key to prosperity and peace, and the key to greater production is the application of modern scientific and technical knowledge. Technology-based innovations at various levels (i.e. national, sectors, or industry) provide pathways to growth as shown by the rapid development of East Asian countries such as Japan, Korea, Taiwan, and recently China. Joseph Schumpeter's "creative destruction" gave birth to the concept of innovations as critical dimension of economic change. Economists Robert Solow and Trevor Swan further (and independently) further recognized the role of technology in economic growth through their neoclassical model of economic development.

Science and Technology (S&T) are problem-driven with the goal of creating and applying knowledge in support of decision making for sustainable development [5]. Its role is crucial with scientific knowledge and appropriate technologies central to resolving the economic, social and environmental problems that make current development paths unsustainable [6]. As such, carefully targeted research outputs and campaigns continue to be important in driving progressive change [7].

In the Philippines, S&T is likewise considered essential to national development [8]. In its Master Plan, DOST states that the goals for national development influence the direction of S&T activities which must respond to the needs of the various sectors of society. Thus, it is imperative that the fruits of S&T be applied to serve national interest and survival. However, the country's S&T institutions, technological readiness, and innovation is far from desired ranking 94th out of 144 countries in a global competitive ranking [9]. urging the need to for an upgrade of the sector for the benefit of the country. According to Faylon (1999 as cited in BFAR [4]) much still needs to be done despite the optimistic view that efforts in R&D have been contributing much of a pattern of sustainable development designed to achieve food security and reduce rural poverty. And this entails collaboration among agencies of the government to be one in transforming Philippine agriculture into a dynamic, technologically advanced, competitive sector. However, this is not to say that the country has not made forward progress. In fact, according to Reyes [10], R&D system has espoused

the sharing of resources, pooling of expertise, joining efforts and converging activities more for the purpose of efficiency rather than effectiveness. Dr. Faylon (1999) further added that scarcity of resources is always the scapegoat for uncompleted if not for the failure of R&D activities; and basically, resource scarcity gave birth to technological inventions, innovative management techniques as well as creative institutional arrangements.

The close link of technology, innovation, and economic development is well established. Modernization of production sectors through massive technology transfer from domestic and foreign sources are being done via the research-extension linkage mechanism or through a direct linkage with the end-users [12]. However, access to technology still presents a fundamental problem especially at lower (micro-) level of the economy. Small farmers not only have limited access to technology but also in extension services and market integration especially in developing countries [13]. Providing an effective extension services to thousands of smallholder farmers remain expensive and even unsustainable [5].

Direct collaboration among stakeholders or actors to exchange know-how will be necessary since knowledge cannot be directly transferred through market mechanisms. Furthermore, close interaction between these actors (e.g. scholars and practitioners) is needed for co-production of useful knowledge [4] and to transform an idea into something that exists in the market such as process, product or service [14].

One such bridging form of sources of science and implementers of technology is the innovation system. The "Innovation System" is one of the approaches for explaining economic development relating different actors in an economy. This approach emphasizes flow of technology and information among different actors and the institutions (i.e. rules and policies) that govern the relationships among actors [14]. The market place as well as intermediary organizations within a given institutional framework is key to an innovative process, and close interaction between the actors is needed in order to turn an idea into a process, product or service on the market [15]. Innovation systems can be at the regional, national, sector, or technology level with the latter usually embedded in other different levels. In the National Innovations System, the government acts as a coordinator among academia, public research institutions, and industry to promote interaction and create conducive environment for innovation [16].

Reyes [11] mentioned the following activities suggested by Tagarino and Kicks (1991) for technology assessment/evaluation,(TA/TE) namely logistics, training, organization restructuring, conducting seminar-workshops and conferences, research, and information dissemination. In addition, she provided the following tips: (1) select well the technology to be evaluated; (2) know the forms and formats required by the funding agency or own organization in TE; (3) clarify TE objectives, available resources/inputs, timetable, and budget; (4) work within the organizational setting and institutional framework; and (5) allow for contingencies.

### ***Impact Evaluation/Assessment***

According to Davis *et al.*[17], the fundamental task of impact assessment (IA) is to trace the way in which a program/project leads to changes in the program/project site. The challenge of which is to identify what exactly changed(compared with what would otherwise have been the case) as a consequence of the research, what the further impacts of this change were (or will be) and how these changes are to be valued, so that the value of the research can be compared with its costs.

In general, economic and social impacts of research and development (R&D) projects in the agriculture, aquatic and natural resources sectors relate to changes in productivity and living condition of target beneficiaries. The framework for impact assessment of any R&D project is based on the premise that the outputs from R&D investment would deliver the outcome that will determine the impacts of the project. Furthermore, by determining the adoption pathway, an impact assessment shows how inputs ultimately result in impacts and benefits. A results map or pathway is a description of the causal links between inputs, outputs, outcomes, and impacts [18]. Development results, or simply results, are outputs, outcomes and impacts of a development intervention. Outputs are the products, capital goods, and services that result from a development intervention. Outcomes are the likely or achieved short-term and medium-term effects of an intervention's outputs. These are observable behavior and institutional changes, usually as the result of coordinated short-term investments in individual and organizational capacity-building for key development stakeholders. Lastly, impacts are the positive and negative primary and secondary long-term effects---both intended and

unintended---produced directly or indirectly by development interventions. The transition of development results from outputs to outcomes, particularly between the completion of output toward the achievement of impact, is then a change in a development condition, as depicted in the results chain. Results chain refers to the causal sequence of development interventions that stipulates the necessary sequence to achieve desired objectives---beginning with inputs moving through activities and outputs, and culminating in outcome, impacts and feedback [19].

The biggest challenge in conducting impact assessment studies is to separate the impact of the intervention from that of other factors beyond the intervention's/ project's control.

### **OBJECTIVES OF THE STUDY**

With the researchers' interest on FFEFP implementation, the study aims to explore the adoption to the project and assess the impacts of the project to the lives of its beneficiaries, to their families, and to their communities.

### **MATERIALS AND METHODS**

This study is an impact assessment. The IA Team and the Plan International-Occidental Mindoro Programme Unit (PU) worked together in coordinating with the respective leaders of the identified municipalities and local agencies in the target province for brief survey, focus group and key informant interviews which were conducted in/with the municipality's constituents. Specifically, the Plan-Occidental Mindoro provided technical and logistical assistance during the data gathering held on February 18-19, 2014. The Plan PU also served as liaison to other agencies within the participating municipalities/barangays.

### **Locale of the Study**

The IA Team selected Occidental Mindoro as the site for impact assessment project. The criteria used in the selection were based on the following: a) with Plan International – Programme Unit base; b) easily accessible from UPLB; c) with identified FFEFP beneficiaries and d) with available guides from Plan or the LGU. The three Local Government Units (LGU) in Occidental Mindoro participated in this study were San Jose, Magsaysay, and Rizal.

### **Sampling Procedure**

The IA study employed purposive sampling design to touch base directly with a representative

sample of the FFEFP beneficiaries in three out of four (4) municipalities in Mindoro Occidental where FFEFP was implemented. Sixty (60) names were identified by the contact persons from local Plan International Unit and agriculture and fisheries departments. The list of names and their locations were provided by a member of the FFEFP Team from Philippine Council for Aquatic Marine Research and Development (PCAMRD).

In collecting the data, the researchers considered ethical considerations such as confidentiality and informed consent. They clarified to the participants that the data that will come out from the interviews, focus group discussions, and survey will only be used for the purpose of the research. The objectives of the study were clearly discussed to the participants and they were given the option to withdraw their participation from the research in case they no longer want to continue.

### **Data Collection Methods**

To achieve the objectives, this IA study reviewed project documents available, conducted focused group discussions, key informant interviews (KIIs) and gathered primary data using a structured survey instrument.

The project documents described the inputs and the corresponding outputs of the FFEFP, which lead toward outcomes; profiles of households, including their perception and participation in the project operations; and the nature and type of partnership at the local level in support of the FFEFP. Desk review of available secondary materials from the local municipal agriculture office, cooperating and funding agencies, and technical consultants were used to characterize the contextual setting of the impact assessment, socio-demographics and the basic profile of technology introduced and adopted, as well as impacts of the project's reported outputs and outcomes. The information were validated through *Focus group discussions* with key officials in the area and some tilapia cage culture technology adopters in one participant-barangay. These were held to document the positive and negative changes in the partnership forged among the stakeholders during the implementation of the Project; *Key informant interviews (KIIs)* of all project stakeholders various stakeholder representatives (e.g. Municipal Agriculture/ Agricultural Technicians, Municipal Nutritionists and available cooperators and beneficiaries); and *Field visits/ocular inspection of the*

established fish farms/cages to see the program implementation in the select barangays.

The IA Team encountered ample challenges while conducting the assessment. The researchers were only able to make sense of available data and anecdotal information provided by key informants and individual farmers available during the primary data gathering period. Analysis and recommendations are considered preliminary and subject to further validation and deeper investigation using a larger population of respondents and a more structured sampling frame and methodology as basis for data analysis.

The following challenges were encountered: There was no needs assessment done before the FFEFP implementation. Thus, there was no clear sustainability plan in place after the program completion; Very limited project documents were available /retrieved after 10 years of program implementation. No records on profiles of household beneficiaries, nutritional status of malnourished children before and after the program implementation, and additional incomes earned from tilapia growing. Reasons for unavailability were due to some internal/physical reorganization of the respective offices of project implementers (Plan-National Unit, Plan Program Unit- San Jose, Occidental Mindoro, PCAMRD); The chosen participant-municipalities and barangays though close to one another as viewed in the provincial map, are actually very difficult to access or reach by tricycle due to rough roads; Most of the identified program cooperators-beneficiaries and implementers are no longer available/traceable at the time of the IA due to job resignations or transfers, local migration, demise, change of assignment, level of absence, among others; The donor agency (Plan International) has shifted its focus from livelihood program during the FFEFP implementation period into the child centered community development approach at this time when the IA was conducted; From the original set of FFEFP beneficiaries, very few remained as few full adopters, more are partial adopters. This created data gaps which inhibited measurement of the adoption rate from the time the tilapia cage culture technology was introduced until the time it was fully adopted by target beneficiaries.

**RESULTS AND DISCUSSION**

**Demographic Characteristics**

A total of 32 respondents (17 key informants and 15 beneficiaries/adopters/replicators) were interviewed and provided information about the

project. The age range of the beneficiaries/adopters /replicators was from 28 years old to 63 years old, with a mean age of 49 years. Majority were males (80%) and came from Barangay Sto. Niño in Rizal, Occidental Mindoro ( see Table 1). Meanwhile, key informants’ ages ranged from 36 to 72 years. They had a mean age of 52 years and are mostly males (58.82%).

Table 1. Demographic characteristics of respondents, Impact Assessment of Fish for Every Family Project, Mindoro Occidental, 2014

Category	Key Informants	Beneficiaries/ Adopters/ Adopters
Age (years)		
Range	36-72	28-63
Mean Age	52	49
Gender		
Male	10 (58.82%)	13 (86.67%)
Female	7 (41.18%)	2 (13.33%)
<b>Total</b>	<b>17 (100%)</b>	<b>15 (100%)</b>

**Technology Transfer and Adoption**

Secondary data revealed that the transfer of technology was implemented collaboratively by PCAMRD and PLAN Philippines. Trainings, seminar, workshops and job-coaching were organized and held to equip the participants with theories and principles and share their experiences on ensuring and measuring the desired outcomes of the project. Among the technical topics discussed were the following: Nutritional Assessment, Technical and Financial Analysis of Farm Operations, Basic Techniques for Pond Culture of Tilapia and Designing Effective Information and Training Materials.

As beneficiaries, acquisition to technology was high because materials and capital were provided. They were given an amount of more than P5,000.00 as initial investment for hatchery operation, inputs (fries and money amounting to less than P5,000.00) and materials such as spades, net, and even oxygen for the growers. Through modeling, these beneficiaries encouraged and attracted *second liner growers*, which replicated what they did. However, there were some modifications in terms of the area devoted to fish growing. Some were not able to follow the recommended area since they have only limited land. Meanwhile, other adopters were able to adopt through campaigns which were assisted or sponsored by local

government units while some were invited personally by the initial beneficiaries or second liner growers.

With the successful adoption of the project, one facilitating factor observed was the collaboration of the implementing agency with its partner institutions particularly the Bureau of Fisheries and Aquatic Resources (BFAR) enabled the project beneficiaries to avail free fingerlings from the Bureau's fish dispersal program.

In Mindoro, hatchery cooperators provide strong leadership within the clusters and are committed to supplying the fingerling requirements of the cooperators at discounted costs to encourage sustained production. Clusters have been strengthened through frequent meetings, group trainings, and commitment among hatchery cooperators to provide fingerlings at discounted costs. Stocking and harvesting are synchronized among cooperators, creating an opportunity for organized marketing of tilapia.

### **Impacts of the FFEFP**

The IA Team was able to find out impacts of FFEFP in three levels: individual, family, and community.

#### ***Individual Level***

The respondents recognized the importance of the program to their personal lives. Through FFEFP, they were able to see how tilapia can be of great help to their families. They highlighted that the program enhanced their knowledge on how to venture into farming. They said that for others, it may be a simple task or job but for them, it is a source of self-satisfaction. They also shared that when they see that their fish cages and/or farms are growing, it gives them a certain kind of positive feeling. They begin to be proud of themselves. They even added that when they feel tired and they want to relax, they just go to their farms and observe many growing tilapia; eventually, they will feel satisfied and relaxed.

#### ***Family Level***

The respondents mentioned that the project has been successful in achieving its objective of providing a good source of protein to those families whose members are suffering from malnutrition because they have recognized the fact that tilapia is a good source of protein. They also believe that tilapia has helped their children to become healthier especially those who grew tilapia for their food supply. The participants mentioned that their children rarely get sick due to poor nutrition when they started growing

tilapia and used their harvest as a source of protein for their children. These are based on what the participants have observed in relation to tilapia farming. They view it positively since, for them, the nutrition of their children has improved with the help of tilapia farming. However, not all families who received fingerlings grew tilapia for the same purpose. When others found out that it is easy to sell tilapia and they can have additional income from it, instead of giving it to their family members, they sell tilapia to the market or to other members of the community who are willing to buy. They explained, however, that it also prevents malnutrition among their children since they are able to have income which allows them to buy food for the family. In case there is an excess, they can use the money to pay for their monthly bills and for the other expenses in the household.

Respondents revealed that through the project, there was an improved communications among and between family members and neighborhood. The members of the families in the selected areas became closer since they helped each other in maintaining their fish farms and/or fish cages because they recognized that tilapia farming really helped them in their daily expenses. They are able to generate income so they can sustain their needs, and also, in case they encounter financial difficulty and their food supply becomes affected, they have a readily available resource; they do not need to buy since they can simply get from their farm. In addition, for those participants who are sending their children to school, the project also helped them provide allowance and respond to other financial needs of their children.

#### ***Community Level***

Among the members of the community, the project has been helpful in terms of strengthening their relationship and allowing them to communicate more often since they have to rely with one another in getting additional information, techniques, and strategies in order to grow their farms. Other community members have been willing to give some fingerlings to others because they also want to help them acquire additional source of income. According to the beneficiaries, instead of giving them money, it is better to provide them fingerlings that will give them the opportunity to start a small fish farm so that they can have a sustainable source of income.

### **SUMMARY AND RECOMMENDATIONS**

The FFEFP which aims to address malnutrition among children has become helpful to its

beneficiaries. The impacts revealed in this research are of three levels such as individual, family, and community. It has encountered some challenges since some families did not really stick to the objective of the project and merely used it in order to acquire additional income, however, the beneficiaries' statements still show that they view FFEFP positively. At the individual level, it helped them enhance their knowledge on fish farming and on the importance of tilapia, at the family level, it has become helpful in developing a close tie among its members since they take care of their farms collaboratively. At the community level, it has also improved and strengthens their relationship since they help one another in developing new techniques and strategies in fish farming.

The positive feedback from the participants regarding the FFEFP shows how Plan International-Mindoro Occidental exerts effort in achieving the mission of the organization. It inspires them to continue creating programs that concern children and Filipino families in general. However, since some challenges were also observed from the implementation of the project, this study also calls for the proper monitoring and evaluation of their initiatives. Tools have to be developed in order to conduct proper monitoring and evaluation procedures that would eventually help Plan International come up with more good projects for Filipino families.

The limitations encountered in doing this impact assessment and the finding of this study helped the IA Team come up with some recommendations that may contribute to a better implementation of the project. These are as follows: 1) Conduct impact assessment of all programs/projects in other covered areas to see fully how effective or ineffective the project is; 2) Strengthen established linkages among and between project implementers and beneficiaries because a number of the beneficiaries have been very difficult to locate and this leads to the third recommendation; 3) Improve monitoring and evaluation not only of the program but also of the activities and participation of the beneficiaries to ensure that they do not get lost in the process of implementation and to see the effectiveness of the program; and 4) Establish database management system to make access easier and less time-consuming. It will also help in acquiring more accurate data.

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