

Info Note

Addressing gender-based impacts of climate change

A case study of Guinayangan, Philippines

Magnolia Rosimo, Julian Gonsalves, Johanna Gammelgaard, Rene Vidallo, Emilita Oro

OCTOBER 2018

Key messages

- Understanding vulnerabilities through the conduct of participatory vulnerability assessments can lead to the development of approaches and technologies that addresses gender issues.
- Woman farmers face the impacts of climate change differently from men. This includes taking over additional and heavier agricultural tasks and becoming more indebted when coping with increasing crops failures or extreme weather events.
- Small livestock systems, a climate-smart agriculture practice, present a less risk-prone livelihood venture. It can feature as a diversification agenda, reducing the risks from crop failure and are relevant to all ecosystems.
- Small livestock initiatives can benefit women as it provides them with a low-labor and manageable economic option, which requires a small startup investment.

The Municipality of Guinayangan and risks of climate change

Climate change exacerbates poverty and affects food and nutrition security, threatening various sectors in the world. Among those vulnerable sectors, agriculture is expected to bear the brunt of climate change impacts because it heavily relies on agro-ecosystems for productivity. Consequently, this will directly hit the livelihoods, food security, and nutrition of rural poor households because they lack the capacity to recover even from a single cataclysmic weather event. Aside from the households, the impacts of climate change extend to the ecosystems, affecting interspecies dynamics, movement of range, altered abundance, and shift in seasonal activities.

Guinayangan, a municipality in Quezon Province, Philippines, covers a land area of 22,800 hectares, comprising 54 *barangays*. From the total population of over 40,000 settling in almost 9,000 households, half are living below the monthly per capita poverty threshold of PHP 1,403 (approximately USD 33).

The climate in the area falls under Type IV Category (as classified by CORONAS) where rainfall is evenly distributed throughout the entire year. Under climate change conditions, Guinayangan is considered a vulnerable community, with more than two thirds of its total land area devoted to agricultural production. For instance, in the recent years, the municipality already experienced longer dry seasons. The locals reported that typhoons are now coming more frequently than before.

Aside from stronger typhoons and prolonged droughts, Guinayangan is vulnerable to storm surges and rising sea levels in the future. These climate-related impacts are believed to be brought by increasing unpredictability of onset of dry and wet seasons, prolonged dry spells, and strong typhoons. Crop failures occurred due to the lack of soil moisture—an important component to protect the crop during its vegetative stage. Even coconut production was observed to be suffering from prolonged dry spells as the nuts produced during the dry months are smaller than expected. With the majority of the town's farmers practicing monocropping, food and livelihood insecurity declines during such times. During their free time, male members of the households look for jobs in nearby urban areas such as Laguna and Manila.

These evidences on the ground prove that climate change poses a real threat to Guinayangan, impacting farmers—both men and women—in different ways. A significant body of literature on gender and climate change shows that women and men perceive and

experience climate change differently, with the women being more vulnerable due to their roles in diversifying livelihood systems, to their dependence on natural resources, and to the structural inequity in the access to and control of such resources (Dankelman 2010; FAO 2011). Despite their vulnerability, women can still act as proactive agents of climate change adaptation.

Livelihoods in Guinayangan and division of labor

Most of the residents of Guinayangan depend on rice and coconut production for their livelihoods. They also grow crops such as banana, corn, peanuts, ginger and eggplants, but coconut production provides the largest share of income to many farm-based families.

The traditional process of coconut production, which yields copra (desiccated coconut) as the main product and provides the farmers liquid cash, lasts for a year and is generally termed as *pagkokopra* or *paglulukad*. Mature coconut is normally harvested every 45 days. Tenancy arrangement in coconut production typically relies on 40:60 to 30:70 profit sharing, where the bigger share goes to the landowner and the rest goes to the tenants or laborers. The laborers, locally called as *maglulukad*, are usually smallholder farmers and tenants. They usually work as a group and move to different coconut areas in what is considered as regular employment.

Locals identified at least 14 activities in the value chain. Generally, men are more involved in the production activities, especially those that require physical strength such as harvesting or polling, collecting, removing of husk, preparing the kiln for smoking, and weighing and loading of the byproduct. Although women are active in all activities, their major roles are directed to shelling, cooking, and managing income.

Many are also engaged in rice production. Most rice areas are rainfed and have one cropping season, while those with access to irrigation have two cropping seasons. Labor is not paid in cash but on the sharing basis called, *talok-ani* system, wherein 20% of the production goes to the laborer while the 80% of it is collected by the landowner.

The division of labor in rice farming depends on the nature of the work. In general, men act on a more prominent role in performing physically demanding work. In this regard, seed selection and securing rice field from pests are done by women. Land preparation is tasked to men. Fertilization and spraying, which could possibly require handling of 16-liter chemical sprayers, is performed by men although some people claim that a few women also take this task. Seed bed preparation and transplanting are divided equally between men and women. Afterwards, women perform most of the weeding

work. Harvesting operations are shared between men and women, unless it is automated or manual threshing where only men do the job. Manual drying and milling are again undertaken by both men and women. During post-harvest, women are the ones managing income from rice.

Farmers in Guinayangan also raise livestock, where large ruminant livestock are assigned to men who graze cows and carabaos, while women tend to small livestock such as pig production. The lack of investment capital keeps pig production to a small section of the wealthier families in the communities. Income from small livestock accrues to women who have control over how that income stream is utilized.

Access to capital

In terms of loans, 63% are secured by women while only 19% are by men. Access to lending is an important mechanism for women to cope with climate change. When they cannot access loans in banks and in other lending institutions, women take loans through several informal channels such as neighbors, microfinance institutions, copra buyers, and cooperatives. They also get loans from their husbands' connections since most men have wide networks of informal loan providers. While women access more capital than men, the ownership of livelihood assets is still skewed towards men.

Another coping mechanism for households is for men to look for temporary jobs outside their communities. This leaves the women to tend to the farms and homes, which burdens them as they must take on the roles of men on the farms. The “feminization” of agriculture, wherein women take on more of the traditional roles of men in farming, is noted after an adverse, extreme climate event such as long dry seasons and crop failure. The lack of timely or adequate levels of rain has resulted in the abandonment of rice areas in parts of the municipality. In other areas, households already shifted to corn-based systems, where women take on a relatively reduced role. The restoration of mung beans—where women have a bigger role—in farming systems is also noted under reduced rainfall conditions.

Differences in the division of labor between men and women are distinct in terms of maintaining livelihoods in Guinayangan. As a result, the impacts of climate change are and will also affect men and women differently. The main differentiated effects are the “feminization” of agriculture. With increased risks of crop failures and unstable incomes, men are inclined to seek off-farm work, which then forces women to take on more agricultural tasks. This situation leaves them with less time for their traditional tasks such as cooking, cleaning, and raising children, potentially compromising these essential livelihood responsibilities. It also forces them to borrow more capital, relegating them to more debt in the future.

Climate change impacts on women and climate-smart agriculture: The case of Arbismen

The case of Barangay Arbismen showed that a better understanding of context and vulnerabilities can help in the design of climate-smart agriculture (CSA) activities, which will support local communities to adapt to the risks and impacts of extreme weather events. The case discussed below provides insights into how CSA can lead to better adaptation measures by communities. It also exhibits how issues of equity and economic empowerment of women can be addressed.

IIRR decided to test CSA approaches that were uniquely relevant to woman roles in farming systems. Starting with six farmers (five women and one man), the project introduced and tested low-external-input, low-carbon foot print approaches to pig production in Arbismen. This approach featured native pig breeds known to tolerate temperature rises and extreme weather events (e.g. rains, typhoons) and housing that featured cross ventilation and non-metal roofs. When raised in housing made of natural materials, the temperatures can be lowered in the pig pens (open sides permitting aeration and roofs made of natural materials). Flooring included bedding made of rice husk to improve sanitation and hygiene and better manage wastes.

Each farmer was given two gilts (young, female pigs) and commercial feed provision enough for the first month. The suggested model was to feed the gilts with commercial feeds for only one month. Subsequently, farmers would rely on alternative feeds such as sweet potato, taro, banana, rice bran, coconut and byproducts. The project's investment was a mere PHP 11,300 (around USD 250).

The purpose of the testing was to show that swine production can be a low-cost investment relevant to the poor, especially women. This reflected IIRR's advocacy for social group targeting, keeping in mind a socially inclusive development agenda for CSA. Starting with a small group of farmers engaged in action research-oriented intervention (i.e., learning by doing, establishing evidence, and using these models for advocacy), the program has grown within Arbismen and has now spread to neighboring villages, primarily engaging women in a livelihood activity that they control.

The practice of low-external-input pig production has drawn wide interest, with the number of women increasing to 74 farmers, and just expanded to five more villages in a two-year time frame. Through the Department of Agriculture, its national network of climate-smart villages (i.e., AMIA villages), and partly, as a result of the visit of representatives to pig production and breeding centers in Guinayangan Quezon, this low-carbon foot print approach of producing safe and protein-

rich food is now widely adopted. These participants were also brought to the National Swine and Poultry Research Station in Tiaong, Quezon where they were able to study the scientific evidence for such alternative systems of climate-smart approaches.

Economic empowerment of farm households, especially women

Growing native pigs has proven to be reliable due to their tolerance to changing climate conditions. They have higher survival rates compared to commercial breeds. A litter can be sold for PHP 2,000 while a fully grown (i.e., 3–4 months) native pig can be sold at PHP 100-120 per kilo at live weight. If they are butchered, they can go as high as PHP 180; if processed into *lechon*, they can generate PHP 200 per kilo. Farmers claim that compared to other sources of income, they find this to be the most worthwhile as it generates the most income from a small investment. As their assets are supplemented and savings are increased, households have more disposable income that they can use, not only to support everyday expenses, but also to purchase non-essential needs. The swine are an asset and an emergency source of funds. Women reported that they were able to acquire school supplies and meet other needs of their children through the sale of livestock.

Food Security: Safe and healthy food

Native pigs also offer safe and nutritious food with its high-protein content. As native pigs are more resilient to changing climate conditions, it provides reliable source of food for families. The crops in the feed gardens such as sweet potato, cassava, and taro can also become household food in times of emergency. No antibiotics or hormones are used. Native pig production does not entail taking loans or credit. The potential of pigs to produce large litters at a time also provides increased assurance that families will consume at least some of this produce.

Woman-friendly and empowering

During a mid-year assessment of CSA options conducted by the IIRR field team, swine raising is now regarded as a livelihood of women. Raising commercial pigs in the village was previously managed by men. However, women are now more involved in the management (i.e., 70% of total time in managing the livestock is assigned to women). As a result, they now have a say on how to spend the income from this livelihood. Women are inclined to spend the associated income on children's education, food, and medical expenses. Many of them claim that they can now afford to serve *lechon*, a roasted pork delicacy normally served only during special occasions (and usually associated with rich households), "enhancing" their social status.

Farmer Learning Groups (FLGs) provide the beneficiaries with a platform for knowledge exchange. The FLGs are designed to bring together the beneficiaries and create a sense of belonging to a community for the farmers by giving them a platform to help one another. The women's participation in the pig production learning group (20 out of 34 of the Arbismen FLG members are women) has increased their confidence and self-worth. The platform of the FLG gives an opportunity to share their experiences in managing their swine and collectively analyze issues in management. In addition, the Arbismen FLG has been able to reach out to more than 15 women in their own village and to more than 10 women in other villages. In the FLG, challenges are overcome together. The research support component (i.e., participatory action research) means that methods adapted to the local conditions of farmers are producing the finest quality pigs for market, at a lower cost and in an environmentally sound manner.

Mitigation: Towards low carbon foot print approaches

Farmers claim that raising native pigs is cheaper compared to commercial pig productions. This is due to the native pig's reliance on locally grown feeds. It can be fed with vegetables and root crops grown in the backyard. This led the farmers to stop buying commercial feeds, contributing to a lower carbon footprint. Native pigs are also resilient to diseases and harsh weather conditions. They seldom get sick, saving the farmer from buying antibiotics and other medicines. All these attributes prove that this approach to pig production is climate-smart.

Conclusions

Women farmers face the impacts of climate change differently from men. This includes taking over additional, heavier agricultural tasks, which could compromise their livelihood responsibilities at household levels. Women also risk becoming more indebted when coping with increasing crop failures or extreme weather events induced by climate change.

Climate-smart agriculture, which features small livestock, highlights the role of livestock in farming systems. In an economy dominated by vulnerable crops, small livestock presents as a less risk-prone livelihood venture. Small livestock can feature as a diversification agenda, reducing the risks from crop failure and are relevant to all ecosystems (i.e., coastal, lowland, and upland, serving food security, nutrition, livelihood, and asset-building objectives). An emphasis on small livestock fosters opportunities for integrating crops, trees and livestock in a closed loop nutrient cycle. What is interesting about small livestock systems as a CSA practice is that it increases gender balance in facing climate change.

The case of native pig cultivation in Arbismen showcases to the CSA community new opportunities in addressing

issues of inequities and disempowerment associated with previous technological interventions, which disproportionately favored the better-off people in the society. Small livestock initiatives as shown here can benefit women as it provides them with a low-labor and manageable economic option, which requires a small startup investment. Small livestock activities can empower women, the landless, and near landless, addressing income inequities. Small livestock gets women on the incremental adaptation ladder, helping them grow their capacities to cope with climate change and providing a new space for economic empowerment.

Understanding vulnerabilities through the conduct of participatory vulnerability assessments can lead to the development of approaches and technologies that address gender issues. Better social group targeting ensures that social inclusiveness goals are also achieved. Community engagement in the process of participatory action research can help local communities build their capacities, reduce the risks of maladaptation, and help them better address climate change.

References

- Dankelman I, ed. 2010. *Gender and Climate Change: An Introduction*. London: Earthscan.
- FAO. 2011a. *The state of food and agriculture 2010–2011: Women in agriculture: Closing the gender gap for development*. Rome, Italy: Food and Agriculture Organization of the United Nations.

This research was carried out as part of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS) and implemented by the World Agroforestry Centre (ICRAF) and the International Institute of Rural Reconstruction (IIRR). This brief summarizes the findings of a case study of a diversification effort undertaken in Guinayangan Climate-Smart Village.

Magnolia Rosimo (maggie.rosimo@iirr.org) is the Learning Community Program Manager of IIRR.

Julian Gonsalves (juliangonsalves@yahoo.com) is a Senior Advisor and former Vice President for Program at IIRR.

Johanna Gammelgaard (johannaga0103@gmail.com) is research fellow with the World Agroforestry Centre Viet Nam.

Rene Vidallo (rene.vidallo@iirr.org) is the IIRR Philippine Program Director.

Emilita Oro (emily.monville@iirr.org) is the Country Director of IIRR for the Philippines.

About CCAFS Info Notes

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS) is led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together some of the world's best researchers in agricultural science, development research, climate science and Earth System science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. Visit us online at <https://ccafs.cgiar.org>.

CAAFS Info Notes are brief reports on interim research results. They are not necessarily peer reviewed. Please contact the author for additional information on their research.

CAAFS is supported by:

