

POLICY BRIEF

A publication of the Policy Advocacy Group (PAG) of the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD)

Readiness of Commodity Stakeholders and Regulatory Agencies in Implementing the Food Safety Law



Food constitutes an important part of life, therefore making its safety a major public concern. In the Philippines, problems with food safety remain a challenge. For example, several food-borne disease outbreaks have occurred in the past due to consumption of contaminated fish products. In 2012, 2 people died and 9 others were reportedly hospitalized after eating pufferfish in Jomalig, Quezon (Mallari, 2017). In the same year, a pregnant woman and a 4-year-old child died of food poisoning from eating young mackerel known as 'lupoy' (GMA network.com, 21 October 2012) due to improper food handling. In the following year, 31 individuals in Samar reportedly got paralytic shellfish poisoning, otherwise known as red tide poisoning (Alarcon, 2017).

The Department of Health's (DOH) Food and Drug Administration (FDA) has identified several food safety concerns (Flores, 2009) such as

microbiological contamination, presence of food contaminants, use of non-permissible food additives, and use of food additives beyond allowable limits.

Microbiological contamination has been observed with *Staphylococcus aureus* in processed food such as hotdogs, noodles, and bakery products and food which do not require additional cooking such as salads, ham, and tuna; *Escheria coli* in assorted cooked food such as undercooked ground beef, organically grown vegetables washed in contaminated water, and unpasteurized fruit juice; *Salmonella* in noodles and peanut butter; and molds and yeast in cakes. In fresh and primary processed food, some of the contaminants observed in addition to foreign matter and filth were aflatoxin in peanuts and corn grits; histamine in marine products; and dioxins and pesticides in various agricultural products.

THE FOOD SAFETY ACT (FSA) OF 2013

To ensure food safety from farm to table, an integrated regulatory system for food control that is anchored in a transparent and risk-based approach was developed through Republic Act 10611 or the Food Safety Act of 2013. The FSA provides the legal framework for food safety in the country as its Implementing Rules and Regulations (IRR) were completed in the first quarter of 2015 through the joint effort of the Department of Agriculture (DA) and DOH, which, together with the Department of Interior and Local Government (DILG), constitute the primary responsible departments in implementing the said law.

As stipulated by the FSA, the DA is tasked to develop and enforce food safety standards and regulations for foods in the primary production and post-harvest stages of the food supply chain. Under the DA, food safety regulatory functions are bestowed on agencies specializing on various commodities (Table 1).

On the other hand, agencies under the DOH are mainly responsible for the safety of processed and pre-packaged foods as well as for the conduct of monitoring and epidemiological studies on food-borne diseases (Table 2).

Meanwhile, DILG supervises the enforcement of food safety and sanitary rules and regulations as well as the inspection and compliance of business establishments and facilities within its territorial jurisdiction in collaboration with the DA, DOH, and other government

Table 1. Food safety regulatory functions for agencies of DA.

Agency	Commodity/ies
Bureau of Animal Industry (BAI)	food derived from animals including eggs and honey production
National Dairy Authority (NDA)	milk production and post-harvest handling
National Meat Inspection Service (NMIS)	meats
Bureau of Fisheries and Aquatic Resources (BFAR)	Fresh fish and other seafood, including those grown through aquaculture
Bureau of Plant Industry (BPI)	Plant foods
Fertilizer and Pesticide Authority (FPA)	Pesticides and fertilizers used in the production of plant and animal food
Philippine Coconut Authority (PCA)	Fresh coconut
Sugar Regulatory Administration (SRA)	Sugar cane production and marketing
National Food Authority (NFA)	Rice, corn, and other grains
Bureau of Agricultural and Fisheries Product Standards (BAFPS)	Fresh plant, fisheries, and aquaculture foods

Table 2. Food safety regulatory functions for agencies of Doh.

Agency	Task
Food and Drug Administration (FDA) Center for Food Regulation and Research (CFRR)	To implement a performance-based food safety control management system
Bureau of Quarantine (BOQ)	To provide sanitation and ensure food safety in its area of responsibility in both domestic and international ports and airports of entry, including in-flight catering, food service establishments, sea vessels, and aircrafts
National Epidemiology Center (NEC)	To conduct and document epidemiological monitoring studies on food borne illnesses for use in risk-based policy formulation
Research Institute of Tropical Medicine (RITM)	
National Center for Disease Prevention and Control (NCDPC)	
National Center for Health Promotion (NCHP)	To advocate food safety awareness, information, and education to the public

agencies. DILG also supports the DA and DOH in the collection and documentation of food-borne illness data, monitoring, and research.

Lastly, LGUs enforce the Code on Sanitation of the Philippines (Presidential Decree No. 856, December 23, 1975), food safety standards, and food safety regulations in their territorial jurisdiction. They are responsible for sanitation in public markets,

slaughter houses, micro and small food processing establishments, and public eating places (Food Safety Act of 2013).

Their institutional capacity and readiness to implement food safety measures in support of FSA was determined by a PCAARRD-funded study titled, "Analysis of S&T-Related Institutional Capacity and Readiness to Effectively Implement the Food Safety Act" by Pabuayon, et al of

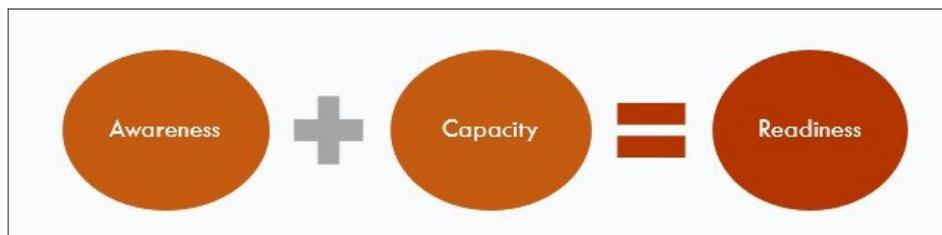
the University of the Philippines Los Baños (UPLB) in 2017. Besides looking at the different food safety regulatory agencies (FSRAs) in the country, the study also assessed the capacity and readiness of the commodity supply chain stakeholders in the poultry and livestock, crops, and fisheries sectors based on surveys of respondents from selected study areas. The food safety issues and problems were based on discussions with key informants and respondents and actual observations of farming and market operations. Most importantly, the study provided recommendations to the stakeholders to implement food safety measure.

DETERMINING READINESS, AWARENESS, AND CAPACITY

The concept of readiness in the study refers to the state of being prepared to carry out a series of actions and achieve compliance to food safety standards. It was determined by gauging the degree of awareness and capacity of the different FSRAs and the other stakeholders involved. Awareness is defined as the knowledge or perception of cultural food safety concepts, policies, and good practices or standards. Meanwhile, capacity refers to the ability to meet the individual, resource, and procedural requirements for the functions in the food control system (quarantine procedures, risk assessment, diagnosis and analysis, epidemiological surveillance, and others) to achieve sustained performance. The achievement of awareness and capacity to some degree implies readiness (Fig. 1).

Levels of food safety awareness and capacity and, finally, readiness to implement food safety measures

Fig. 1. Determinants of institutional readiness to implement food safety measures.



were determined through a scoring system used for various food safety indicators. Awareness indicators include concept of food safety and knowledge of food safety procedures/standards and regulatory agencies. Capacity indicators were based on the respondents' individual characteristics, business or farm operations, and actual adoption of practices prescribed in the Philippine National Standards (PNS) for crops, livestock and poultry, and aquaculture.

RESULTS BY COMMODITY GROUP AND STAKEHOLDER

Awareness and Capacity: Livestock and Poultry

Many food safety issues exist in the livestock and poultry commodity supply chain. These are inadequate sanitation and handling practices in public wet markets, exposure of fresh carcasses to various sources of contamination, processing of unsold meat into products that do not undergo quality control, selling of double dead meat, and outbreaks of bird flu or Newcastle disease in poultry.

In terms of food safety awareness level of livestock and poultry producers, dairy producers have the highest mean overall score of 59%, while broiler producers have the lowest at 46% (Fig. 2). Dairy

producers had relatively higher awareness level because some respondents received support and assistance from government institutions like the National Dairy Authority (NDA) and Philippine Carabao Center (PCC) not only when it comes to the acquisition of stocks, but also in knowledge transfer through training and seminars. In terms of their overall mean capacity scores, significant differences also exist, but the dairy producers still have the highest score (59%).

Among the livestock and poultry traders or processors, the mean awareness scores of traders are relatively low, with 42% as the highest for dairy traders and 29% as the lowest for egg traders (Fig. 3). Meanwhile, their overall capacity score is 50%.

Dairy traders have the highest overall capacity score of 60%, which is significantly different from the scores of the other traders ranging from 43% for egg and 45% both for broiler and swine traders. Most of the broiler, egg, and swine traders are focused on the hauling, transporting, and selling functions and have not attended any training or seminar related to food safety.

In the case of livestock and poultry establishments, feed mills have the highest awareness score with 69%

Fig. 2. Awareness level and capacity level: Livestock and poultry producers.

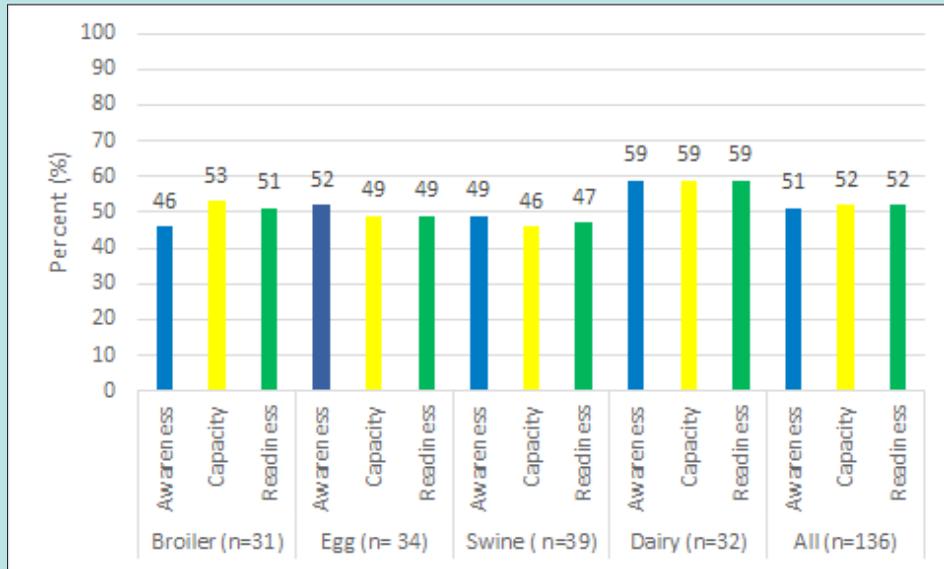


Fig. 3. Awareness level and capacity level: Livestock and poultry traders/processors.

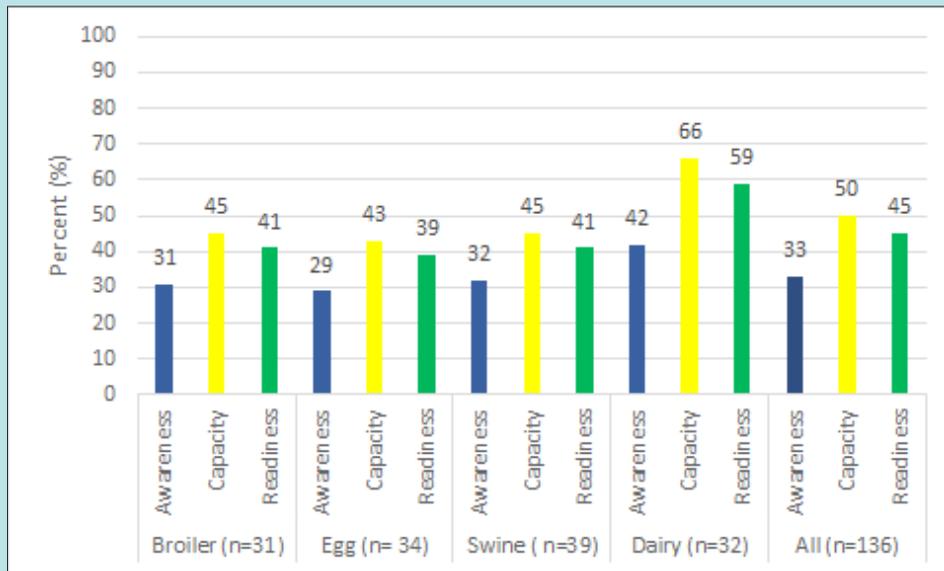


Fig. 4. Awareness level and capacity level: Livestock and poultry establishments.



(Fig. 4). Generally, awareness scores of meat establishments are higher than those of producers and traders. Meanwhile, the average capacity score of the meat establishments to implement food safety measures is 61%. The average overall capacity score is highest for the dressing plants with 68% because three of the six are accredited by the National Meat Inspection Service (NMIS), followed by the feed mills with 59%, which are all into commercial operation, and the slaughterhouses with 57%, which are all locally-registered.

Readiness: Livestock and Poultry

The overall readiness of stakeholders to implement food safety measures based on awareness and capacity scores is generally at the moderate level (between 34-66%), but there are differences across the stakeholders within this range. The broiler and dairy producers (Fig. 2) have higher readiness scores compared to the other producers at 51% and 59%, respectively, which could be due to the contractual nature of business of some broiler producers and attendance in trainings and seminars of dairy producers. Egg and swine producers (Fig. 2) have also only moderate readiness scores at 50% and 47%, respectively, because of their use of antibiotics for preventive purposes and growth promotion (mostly layers) and varying availment of trainings about food safety policies and procedures.

Among traders, only dairy traders have relatively high readiness level of 59% (Fig. 2) because of strict handling of raw milk and availment of trainings and other government services. They also comply with business registration

requirements. All meat and feed establishment operators have relatively high readiness level because of their continuous effort to avail of seminars that increase their technical knowledge regarding food safety policies and procedures.

Awareness and Capacity: Crops

The production of fruits and vegetables also sometimes involve many food safety issues. These include:

- Using mixed pesticides and even banned pesticides as reported by some farmers
- Spraying them without protective gear
- Spraying on periods close to the maturity or harvest of fruits and vegetables
- Failing to analyze the maximum residue limits for pesticides
- Absence of monitoring and documentation of pesticide spray program for mangoes intended for the local market
- Improper disposal of empty pesticide bottles
- Using kerosene or dishwashing liquid to improve the appearance of vegetables
- Lack of sanitation in farms
- Non-conformity with prescribed packaging materials
- Lack of traceability system and labeling for vegetables
- Unsanitary handling of produce at the trader's level

Among the producers, the mean overall awareness score is higher for fruits (mango and banana) at 59% than for 'pinakbet' vegetables at 38% and 42% for high-value vegetables (Fig. 5). Majority of pinakbet (tomato, eggplant, and bittergourd ['ampalaya']) farmers and high-value

vegetable (cauliflower and cabbage) farmers remain in the moderate awareness levels; the opposite is true for fruits where most are in the high and moderate levels. The mean overall capacity of crop producers is 51% and it differs significantly across types of commodity, being highest for banana and mango producers at 57% (Fig. 5). It can be noted that they have relatively higher education, bigger farms, and some either have institutional or export market compared with the vegetable farmer-respondents.

For those who trade fruits or produce, the mean awareness score is higher for fruit traders at 53%, compared to pinakbet traders at 31% and high-value vegetable traders at 17%. Thus, there are more fruit traders belonging to moderate level of awareness compared to vegetable traders.

Meanwhile, pinakbet traders have higher capacity scores with 53% than fruit traders with 46% and vegetable traders with 52% (Fig. 6). In terms of high-value vegetables,



Absence of monitoring procedures for mangoes. Image credit: University of the Philippines Los Baños (UPLB) - College of Economics and Management (CEM)

Fig. 5. Awareness level and capacity level: Vegetable and fruit farmers.

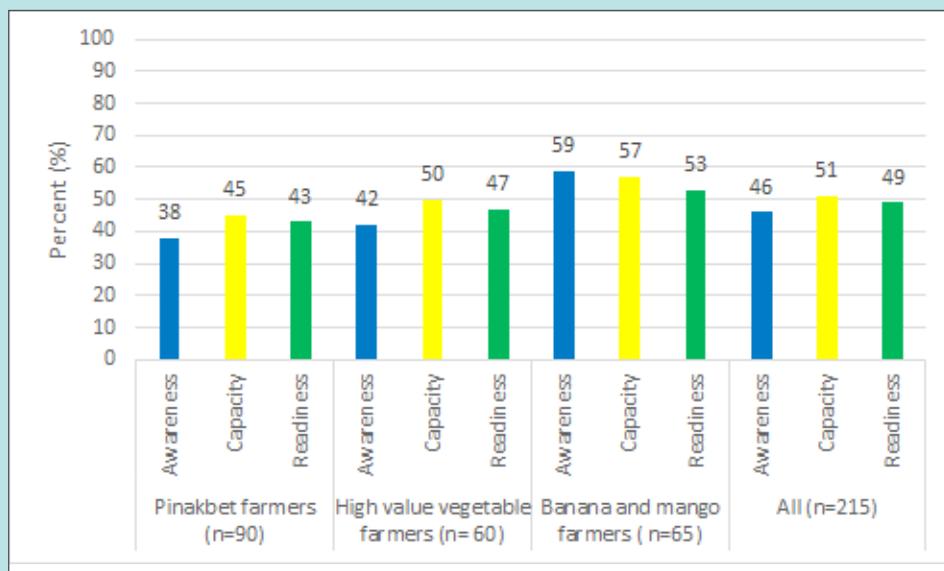


Fig. 6. Awareness level and capacity level: Vegetable and fruit traders and processors.

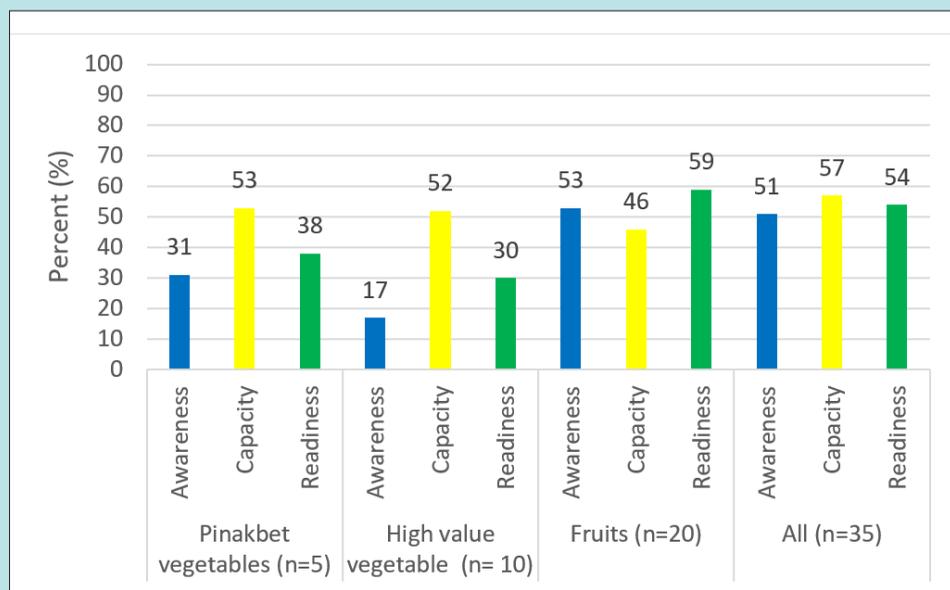
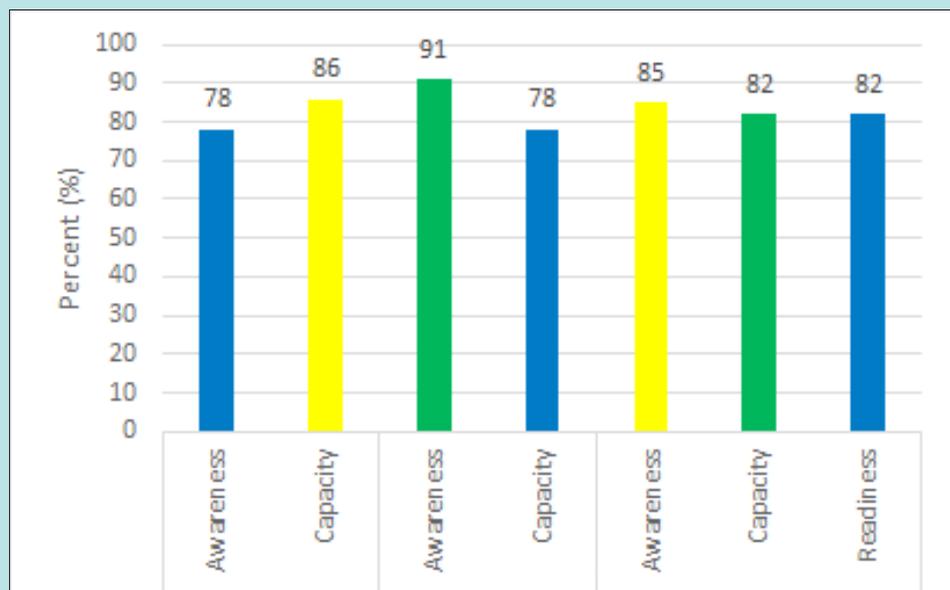


Fig. 7. Awareness level and capacity level: Fruit processors.



overall awareness is significantly higher for producers than traders. Based on interviews, traders are not really aware of policies and procedures related to food safety and the FSRAs. Some traders said they did not focus much on food safety activities and know-how since they are more concerned with the buy-and-sell business and its financial aspect. For pinakbet

vegetables, awareness is not significantly different between farmers and traders. There are 52% of vegetable traders and some 20% of fruit traders who belong to high capacity level.

Meanwhile, processors of dried mango have the highest awareness score at 91%) and it is significantly different from that of producers and

traders. Most of these processors are GMP- and Hazard Analysis and Critical Control Points (HACCP)-certified and they also adopt.

Regardless of commodity groups, overall awareness scores differ across stakeholders. Processors generally rank first, followed by farmers, and lastly by traders. Fruit processors have high awareness of the food safety-related policies and procedures.

Readiness: Vegetable Farmers, Traders and Processors

In general, the observed trend is that readiness level 1) is highest for processors, followed by farmers, and lastly by traders; and 2) regardless of type of stakeholder, is highest for banana and mango, followed by high-value vegetables, and lastly by pinakbet vegetables. Generally, banana chip and dried mango processors tend to meet the requirements of their markets (which in this case include international buyers) in terms of GMP certification, registration, better facilities, labeling, scale of operation, more resources, etc.

On the other hand, farmers who are mostly members of cooperatives or association seem able to avail of LGU services such as training and inputs, and are knowledgeable of, and claim to be already adopting some of the GAP practices. Traders appear not being able to attend food safety-related trainings, are more focused on their buy-and-sell and transport operations, are not keen on registration requirements, and believe that the food safety responsibility rests on the producers and processors.

Readiness appears correlated with the type of market outlet and the value of the product. Banana and mango are exportables and the stakeholders are generally keen on observing the buyers' requirements. Price premium is quite evident for quality products. Some of the high-value vegetables are supplied to institutional markets which also require that safety and quality conditions are met. However, pinakbet vegetables are considered ordinary vegetables and usually sold in public markets and local village stores where quality requirements are less stringent. Price incentives associated with product quality in these markets are not generally present and trading rules are informal and less clear. Thus meeting the food safety requirements like proper food handling is not given much attention. The findings imply the need to look into the incentive and market structure vis-à-vis the food safety regulations. Compliance with food safety standards involves analyzing the willingness of consumers to pay for safe and quality products as well as the cost to producers, traders, and processors of adopting such standards and meeting the regulatory requirements.

Awareness and Capacity: Fisheries

There are also a lot of food safety issues in the fisheries sector. These include:

- Fish culture sometimes done in unsanitary or polluted waters
- Water quality in culture facilities are not monitored
- Non-compliance with Good

- Aquaculture Practices (GAQP)
- Not subjecting processed fish to quality control
- Poor handling of fish and other aquatic foods in the public markets
- Documented cases of export rejections for processed fish products due to their excessive metal content
- Lack of a traceability system
- Non-compliance with GMP for processing shellfish that also requires labeling, use of protective equipment for

workers, and cleanliness in work area

The mean overall awareness scores of the producers are quite low, with the highest for high-value fish (milkfish and shrimp) at 32% and 28% for shellfish (Fig. 8). Majority of the high-value fish producers have moderate to low awareness.

Mussel and oyster producers are in the low awareness category. Their awareness is greatly affected by the producers' knowledge of food safety

Fig. 8. Awareness level and capacity level: High-value and shellfish producers.

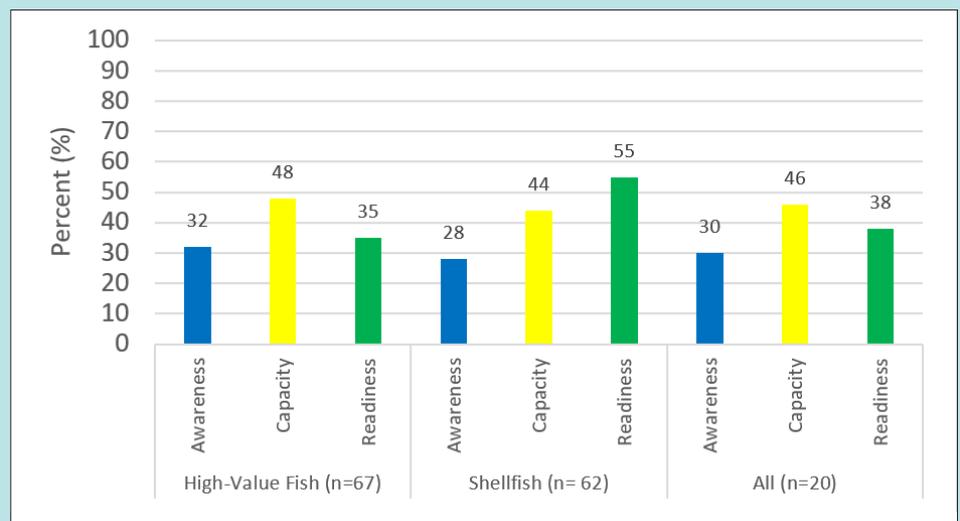
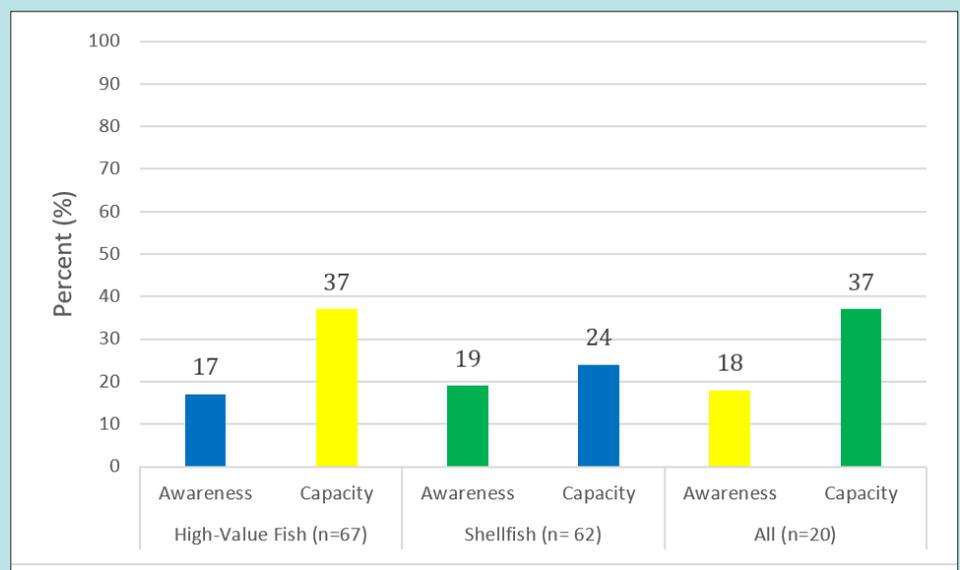


Fig. 9. Awareness level and capacity level: High-value and shellfish traders.



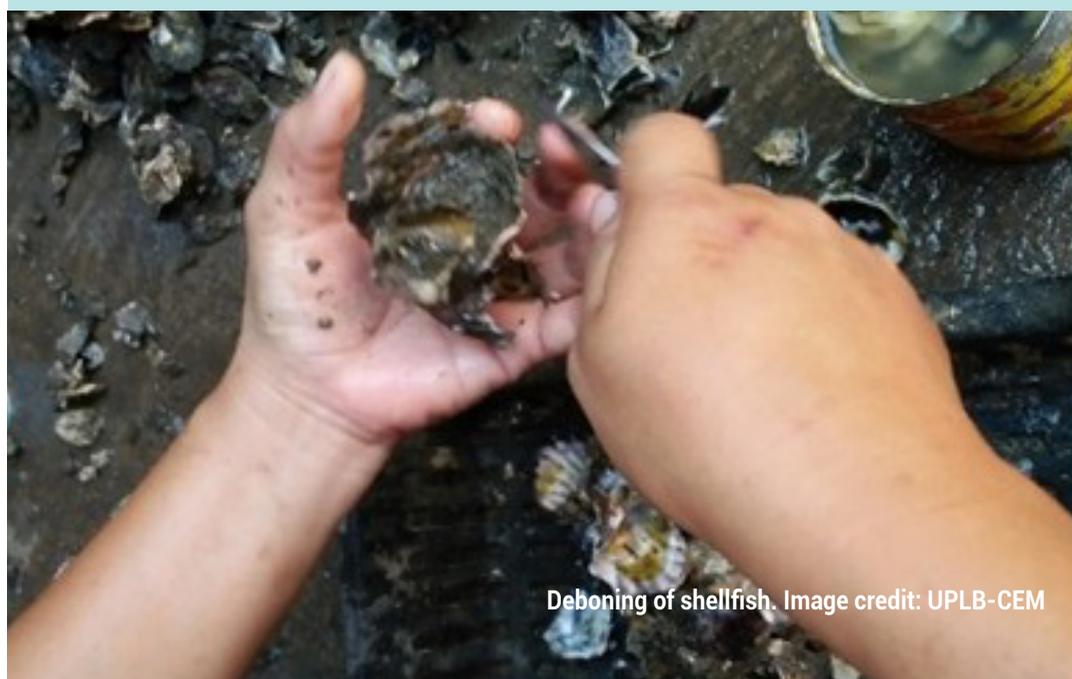
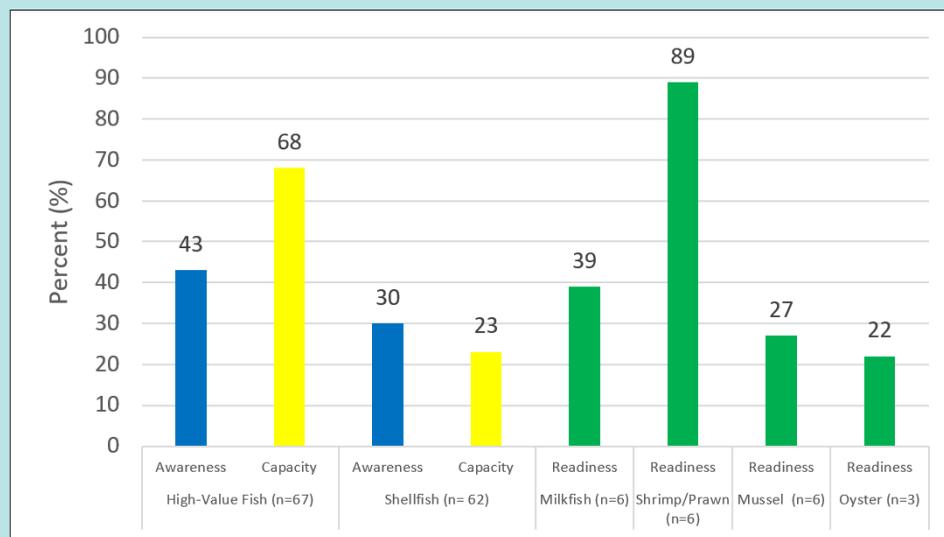
policies and procedures, where only a few have positive responses. Some producers also have irrelevant answers to the food safety concept and are not familiar with the different FSRAs. Meanwhile, the average overall capacity score of both high-value fish producers and shellfish producers is 46%, with a significantly higher score for the former at 48% compared to the latter at 44%.

On the other hand, the mean awareness score of the traders is only 18% (Fig. 9). Although shellfish traders operate along roadsides, are more frequently seen and monitored, and given informal advice or information on food safety standards by passersby and monitoring officers, still the awareness score is low for shellfish traders at 19%. Their overall capacity score is moderate averaging at 37% (Fig. 9). High-value fish and shellfish traders are also mostly in the moderate capacity level at 37% and 24%, respectively.

In the case of the processors, high-value fish processors are mainly in the high awareness level at 43%. Most of them are shrimp processors-exporters who must be knowledgeable of food safety policies, procedures, concept, and agencies. Shellfish processors mostly belong to the moderate level.

On the one hand, the overall capacity score of high-value fish processors is significantly higher at 68% than that of shellfish processors at 23% (Fig. 10). The relatively high score is contributed by the shrimp processors who are engaged in large scale operations. In contrast, the shellfish processors are primarily in slightly lower capacity level at 23%.

Fig. 10. Awareness level and capacity level: High-value and shellfish processors.



Deboning of shellfish. Image credit: UPLB-CEM

Readiness: Fisheries

Generally, readiness score is higher for those operating on large-scale basis and have an export market and requiring business registration and certification of compliance with food safety regulations and standards. Incidentally, the same have relatively greater access to training and seminars that provide food safety-related information. Thus, the shrimp processors generally exhibit

high readiness level compared to producers and traders at 89% (Fig. 10).

Milkfish and shellfish producers, traders, and processors are small and medium scale enterprises (MSMEs) operating in the rural areas and largely sell in the local markets. Although LGU trainings are available for some of them, they think that efforts for FSA implementation

is still lacking. Their resources for compliance with food safety regulations are inadequate.

RECOMMENDATIONS FOR COMMODITY STAKEHOLDERS

Based on the findings about the readiness of stakeholders to implement food safety measures in their respective commodities, several recommendations were made.

One is to continue holding FSA orientations and roadshows to raise awareness of food safety issues and measures. It will also be useful to include consumer education on food safety in the curriculum to enhance awareness among the general public.

Membership of commodity stakeholders to cooperatives or associations and business registration needs to be encouraged, especially for small-scale operations. The activities of these cooperatives or associations have to include regular food safety training in relation to FSA compliance and improving the competitiveness of the stakeholders. The food safety training can focus on the various aspects of GAqP, Good Agricultural Practices (GAP), or Good Animal Husbandry Practices (GAHP) in the case of producers; Good Handling Practices (GHP) for those who are traders; and Current Good Manufacturing Practices (CGMPs) or HACCP for the processors. Additionally, an incentive system to encourage compliance with GMP, GAqP, and GAHP standards needs to be established.

Fig. 11. Radial Diagram on Readiness on Food Safety Act OF DA agencies.

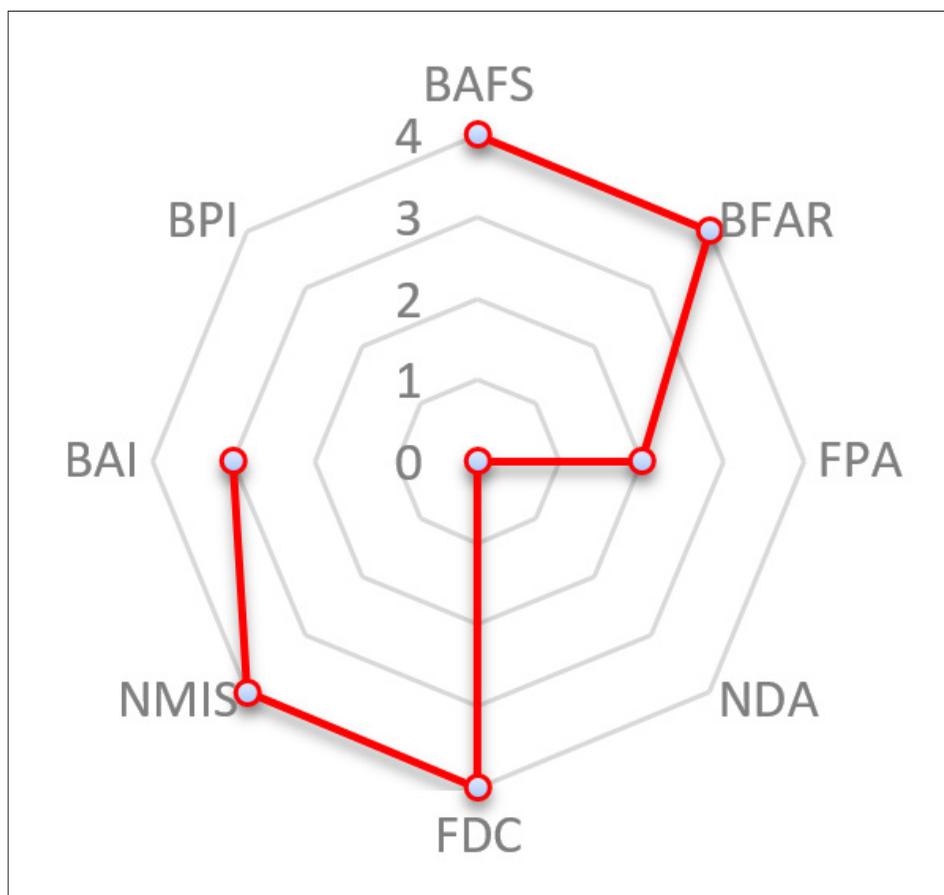
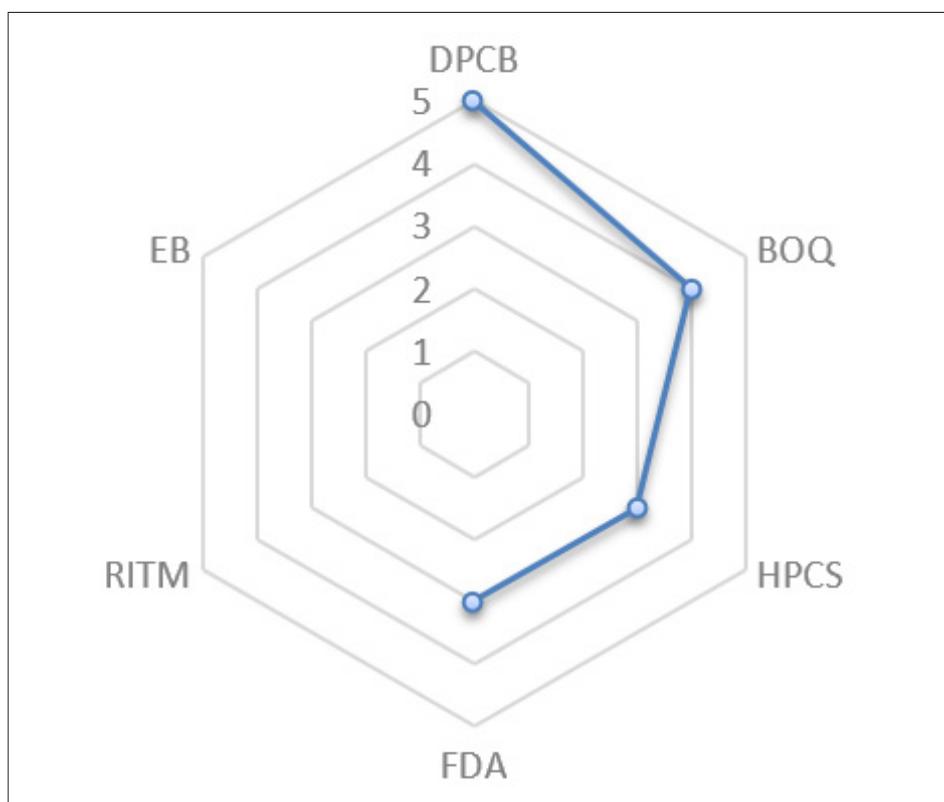


Fig. 12. Radial Diagram on Readiness on Food Safety Act OF DOH agencies.





Improper disposal of empty pesticide bottles and lack of sanitation in farms. Image credit: UPLB-CEM

nature and not as a regulatory agency.

For DOH agencies, DPCB reported a readiness score of 5 (Fig. 12). The agency asserts that they have been competently complying with the Sanitation Code as emphasized in the FSA. Meanwhile, BOQ, HPCS, and FDA reported a readiness score of 4, 3, and 3, respectively. No confirmatory self-assessment was done data is available on RITM and EB.

Generally, all FSRAs acknowledge their new roles and mandate with regard to the FSA. All of the FSRAs are preparing and enhancing their organizational capacities to undertake the requirements.

However, new resources (manpower, equipment, and laboratory facilities) are also needed and new procedures or protocols have to be made (risk analysis and management, registration, and inspection), among others. Some of the FSRAs are developing new organizational roadmaps to include aspects of the FSA.

ROLE, AWARENESS, AND CAPACITY OF LGUs TO IMPLEMENT FOOD SAFETY MEASURES

Based on the FSA of 2013, LGUs have specific responsibilities and shared mandates with the FSRAs. The LGUs are responsible for ensuring food safety in their respective areas of jurisdiction, are to be capacitated by the DA and DOH agencies through training, and shall participate in the development of food standards and activities undertaken by DA and DOH.

A traceability system also needs to be developed to identify food safety issues and determine accountability of stakeholders in the specific stages of the supply chain.

Finally, the inspection and monitoring capacity of FSRAs for compliance of stakeholders with standards (antimicrobial usage in poultry and livestock, MRLs for pesticide residues, protocols on pesticide use) have to be strengthened.

SELF-ASSESSED READINESS OF FSRAS TO IMPLEMENT FSA PROVISIONS

The FSRAs assessed their readiness to implement FSA provisions by doing a combination of focused group discussions and reporting on a rating scale of 1 to 5 where the score of 1 is the lowest and 5 is the

highest. Their answers were plotted in a radial diagram that immediately provides a quick appreciation of the scores given by the agencies. A score close to the outer margins of the graph would show high readiness and capacity to implement their mandate as indicated in the FSA, while a score near the center would show low readiness and capacity to undertake the FSA.

Among the DA offices, the NMIS, FDC, BFAR, and BAFS reported a readiness score of 4. Subsequently, the BAI indicated a readiness score of 3. Meanwhile, FPA provided a readiness score of 2. For FPA, they opined that their mandate is on ensuring that the agricultural inputs (fertilizer and pesticides) are compliant with the standards, while NDA asserts that their original mandate was of a developmental

More specifically, the LGUs are responsible for the enforcement of the Code on Sanitation of the Philippines, food safety standards and food safety regulations where food is produced, processed, prepared, and/or sold in their territorial jurisdiction. This shall include, but shall not be limited to the following:

1. Sanitation particularly in public markets, slaughterhouses, micro and small food processing establishments and public eating places;
2. Codes of Practice for production, post-harvest handling, processing and hygiene:
 - Safe use of food additives, processing aids and sanitation chemicals; and
 - Proper labeling of prepackaged foods.
3. The DILG shall support the DOH and the DA in the collection and documentation of food-borne illness data, monitoring, and research.
4. The DILG and the LGUs shall participate in training programs, standards development and other food safety activities to be undertaken by the DA, DOH, and other concerned national agencies.

The level of FSA awareness of the respective LGUs covering the study areas for poultry, livestock, crops, and fisheries is generally low. Majority of the LGUs visited are not aware of the FSA and generally attribute it to the provisions of the Sanitation Code as well as compliance with the GAP, GAHP, GAQP, and Consumers Act. This implies that effective implementation of the FSA at the local level will

require increased FSA awareness and knowledge of the LGUs.

Some of the reasons for the weak enforcement of FSA of these LGUs are the limited number of personnel, lack of training/seminars on FSA, and inadequate coordination with the FSRAs considering the absence of instructions on the FSA implementation from the national government (at the time of survey).

RECOMMENDATIONS FOR FSRAs AND LGUs

There is a need to reconcile, harmonize, or rationalize overlapping functions and tasks. The FSRAs, in particular, have this situation, and it would be important for them to harmonize any overlapping functions and tasks in relation to the FSA given their previous independent mandates on food safety issues. There are said to be dimensions in the FSRAs that call for continued dialogue to remove or reduce dissonance among them so that clients would not be at a loss on whom to deal with on specific requirements as well as their customers. Drilling out the details towards a harmonized policy in which final stakeholders and by implication the organic organization will have a clear delineation of function is important. Thus, essential to this is the call for enhanced mechanism within the Food Safety Regulation Coordinating Board (FSRCB) to facilitate the process.

Another recommendation is to lobby to the Department of Budget and Management (DBM) for additional staff who can adequately fill the needs of the FSRAs in fulfilling their mandates when it comes to food safety measures. Additional

equipment may also need to be lobbied, especially in the creation of a centralized and satellite reference laboratory.

FSRAs have already expressed the need to have one. As a member of the FSRCB, DOST took the initiative to establish it, but the planned laboratory may only be established in Manila, which will be limiting for stakeholders in the regions. It may also be helpful to establish reference laboratories in the regions to make the transactions of stakeholders there easier.

Further, it may also be necessary to lobby for capacity development of staff in the FSRAs. Their succession plans should ideally be able to ensure a Civil Service Commission (CSC) competency-based recruitment and selection process.

Moreover, learning and development initiatives need to be supported. This capacity development support would be necessary at all levels of the FSRAs organizational hierarchy. Besides those areas, it is important to address the question of what to regulate in that while some of FSRAs had been regulatory agencies from the time they started, others began as development-oriented organizations. Doing regulatory tasks and responsibilities has to be made high priority for staff development.

Lastly, FSRCB needs to convene and continue its activities in relation to food safety regulation. The momentum towards more regular meetings and coordination needs to be pursued.

REFERENCES

- Alarcon, C.V. 2017. "Red tide toxin downs 31 persons in Samar" Philippine Information Agency. Retrieved November 8, 2017 at <https://pia.gov.ph/news/articles/1001843>.
- Flores, M.B.T. (2009). Food Safety and Nutrition in the Philippines. Retrieved from the world wide web: www.nnc.gov.ph/.../91-food-safety-and-nutrition-in-the-philippines on March 3, 2014.
- GMA News Network, 2012. Food poisoning kills pregnant woman, 4-year-old in Bacolod. Retrieved from the world wide web :<http://www.gmanetwork.com/news/news/regions/279085/food-poisoning-kills-pregnant-woman-4-year-old-in-bacolod/story/> on November 8, 2017.
- Mallari D.T. 2017. Two dead, 9 hospitalized from puffer fish poisoning in Quezon. Retrieved from the world wide web on <https://pia.gov.ph/news/articles/1001843> November 8, 2017.
- Pabuayon I.M, Medina, S.M., Dagaas C.T., Sumague M. J.V., and Querijero N.J.V. 2017. "Analysis of S&T-Related Institutional Capacity and Readiness to Effectively Implement the Food Safety Act." Terminal Report submitted to the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD).
- Pabuayon I.M, Medina, S.M., Padilla, M.A. and Sumague M.J.V. 2018. "Are we ready for the food safety regime? Evidence for the commodity stakeholders." Paper presented during the Seminar Series on Socio-Economics Researches in Agriculture, Aquatic and Natural Resources. Philippines.
- Querijero N.J.V. 2018. "Assessment of FSRAs and LGUs Regarding Food Safety Act Implemented. Paper presented during the Seminar Series on Socio-Economics Researches in Agriculture, Aquatic and Natural Resources. Philippines.

EDITOR'S NOTE

This paper is based on the DOST-PCAARRD and University of the Philippines Los Baños project, "Analysis of S&T-related Institutional Capacity and Readiness to Effectively Implement the Philippine Food Safety Act," under the leadership of Dr. Isabelita M. Pabuayon.

ACKNOWLEDGMENT

The authors would like to express their sincerest gratitude to the following agencies for their support during the conduct of the study:

Department of Agriculture: Bureau of Animal Industry; National Dairy Authority; National Meat Inspection Service; Bureau of Fisheries and Aquatic Resources; Bureau of Agricultural and Fisheries Product Standard; Bureau of Plant Industry; Fertilizer and Pesticide Authority; Philippine Coconut Authority; Sugar Regulatory Administration; and National Food Authority.

Department of Health: Food and Drug Administration - Center for Food Regulation and Research; Bureau of Quarantine; National Epidemiology Center, Research Institute of Tropical Medicine, and National Center for Disease Prevention and Control; and National Center for Health Promotion.

POLICY BRIEF highlights DOST-PCAARRD's stance on policy issues on S&T in agriculture, aquatic, and natural resources through the coordination of the *Policy Advocacy Group (PAG)*. The PAG spearheads policy and advocacy related to PCAARRD Medium-term Plan.

For more information, please contact:

The Executive Director

DOST-PCAARRD
Los Baños 4030, Laguna, Philippines
Tel. No.: (6349) 554-9670
Fax No.: (6349) 536-0016; 536-7922
E-mail: pcaarrd@pcaarrd.dost.gov.ph
Website: www.pcaarrd.dost.gov.ph

Technical Writers	:	Isabelita M. Pabuayon Clarita T. Dagaas Simplicio M. Medina Macrina T. Zafaralla Gideon P. Carnaje Nelson Jose Vincent B. Querijero Maria Josie V. Sumague Mildred A. Padilla Elsa B. Esguerra
Technical Editors	:	Fezoi Luz C. Decena Annette M. Tobias
Editor and Designer	:	Katrina Marie V. Mananghaya
Editorial Advisers	:	Ernesto O. Brown Marita A. Carlos