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RESEARCH EVALUATION: PROJECT TO PROMOTE ORGANIC FOOD AND THE NUTRITION IN UBON RATCHATHANI

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ABSTRACT

This paper presents the evaluation results of the project "Promoting the Safe Production and Consumption of Food for the Nutrition Well-Being of Local Communities in Ubon Ratchathani". The project intended to promote greater food safety through a full-circle promotion of organic agriculture: organic product supply chain; organic market chain; and organic consumption chain to farmers in twelve districts, school students from nineteen schools, and consumers in Ubon Ratchathani. The study used qualitative and quantitative research methods. Questionnaires, participant observation, focus groups, in depth-interviews, and documentary research were employed to evaluate the project. The study showed that the project achieved all of its indicators to promote the full-cycle of organic farming which includes the production, marketing and consumption. The project was successful due to the following nine factors: (1) support of executives; (2) project manager and staffs; (3) team work of internal and external organization; (4) well-planned and comprehensive project; (5) flexibility of project proceeding; (6) clear and extensive communication and public relation; (7) problem solving; (8) identifying target group and indicator; and (9) proceeding and monitoring the project. The project's objectives and activities met with the SDGs goals, primarily those related to SDG 12 (sustainable consumption and production).

Keywords: Food safety production and consumption; sustainable consumption and production; nutritional well-being of local communities

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1. INTRODUCTION

Thailand's agricultural land area ranks 48th in the world. Yet, the country was the world's 5th largest user of agricultural pesticides. Approximately 160,000 tons of chemicals for agricultural use were imported each year with a cost of about 22 billion baht, and the amount imported has been increasing by 50% in the past five years (Sanitsuda, 2016). In 2016, around 400,000 farmers in 72 provinces were identified and tested for toxicity by the Bureau of Occupational and Environmental Disease (BOED) and 150,000 or 36.76% of the farmers were at risk of elevated toxicity levels, a significant increase during the past five years (Thai Health Promotion Foundation, 2018). According to the Thailand Pesticide Alert Network (Thai-PAN), a 2017study on 178 vegetable samples from modern trade supermarkets and local markets, around 40% of the samples were contaminated with chemicals above the recommended standard (ThaiPublica, 2019).

In terms of consumption, only 34% of Thais consumed enough vegetables and fruits, below the standard the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) recommend, i.e. a minimum intake of 400g of fruit and vegetables per day (Khaosod, 2020). School students faced similar problems. Even if they have access to a school lunch, the quality of the meals is questionable. A study by the Thai Education Foundation surveyed fruits and vegetables from 34 schools and found that 210 of the 335 samples, about 63%, were unsafe to consume. Moreover, the study showed pesticide residue on the vegetables and fruits has damaging effects on children's brain development (Phutachak, 2018).

Circumstance of agricultural chemical usage and its harmfulness in Ubon Ratchathani was similar to that of the country as a whole. Ubon Ratchathani Province total land area is 9,808,675 rai. With farmland in 2018, the estimation was 5,623,865 rai, or 57.34 % of the total land area (Ubon Ratchathani Information Center of Agriculture and Cooperatives, 2018). The entire area used for the organic farming in 2018 was around 52,393 rai, about 1% of the province (Ubon Ratchathani Provincial Agriculture and Cooperatives Office, 2018). In 2012, Ubon Ratchathani Public Health Office tested the farmers' blood. The tests indicated that of 100 farmers, 30 them was contaminated with toxins (National Health Commission Office, 2017). An excess of toxic agricultural substances utilized in Ubon Ratchathani farmland impacts not only the farmers' health, but also consumers' health.

Having recognized the problems mentioned above, Sangsook Media Foundation developed the "Project to Promote the Safe Production and Consumption of Organic Food and the Nutritional Well-Being of Local Communities in Ubon Ratchathani". It was designed to promote the full-cycle of organic farming from production, marketing and consumption. Evaluations were carried out both during the project cycle to improve the working process to fulfill the project's objectives and at the end of a project according to the activity achievement index.

2. MATERIALS AND METHODS

The evaluation research included the qualitative and quantitative research methodology. The target research group included 88 farmers, who also sold their own products, 420 consumers, 235 target school students from nineteen schools, five project staff, and relevant public and private organizations, including three provincial public health officers and two provincial agriculture officers. Questionnaires, participant observation, focus groups, in depth-interviews, and documentary research were applied for this research. Percentage, average, and content analysis were adopted to describe and analyze the data. Meetings with the evaluation team and project staffs were organized before the project was launched and also to design qualitative and quantitative tools for evaluation, such as a plan with a fixed timeframe for assessing process, output, outcome, and impact of the project.

A benchmark of the project included 9 indicators as follows: (1) to identify at least 100 organic farmers; (2) to have at least 80 farmers of the project who passed the organic guarantee system; (3) to establish 8 organic agricultural model and learning centers in 12 communities; (4) 4 green market models set up across all communities; (5) to have at least 15 schools to encourage students to consume organic products in their communities; (6) to reduce the number of overweight and obese students to less than 10%; (7) encouraging school students and farmer to consume food with organic products as well as ensuring that 50% of participants consume the recommended 400 grams of fruits and vegetables a day; (8) ensuring that at least 65% of the target consumers gain a better understanding of nutrition and adopt healthier eating behaviors and; (9) ensure the development of at least one local policy to promote safe and adequate consumption of fruits and vegetables or to decrease the number of obese and overweight people.

3. RESULTS AND DISCUSSION

"Project to Promote Food Safety Production and Consumption for the Well-Being of Local Communities in Ubon Ratchathani" within a one-year time period was developed to promote food chain safety through the full-circle organic agriculture promotion from production, marketing and consumption. Three key organic agriculture promotions embraced nine indicators as consequent details.

Promotion of organic product supply chain

The promotion of the organic supply chain included three indicators: (1) to identify at least 100 organic farmers; (2) to have at least 80 farmers of the project who passed the organic guarantee system; and (3) to establish 8 organic agricultural model and learning centers in twelve communities.

The first indicator was to identify at least 100 organic farmers. The evaluation showed 170 farmers applied for organic agriculture training of organic farming knowledge, standards, and techniques. As a consequence, the project exceeded its benchmark by 70 farmers participating in the scheme.

Organic farming is based on sustainability of ecological system, biodiversity, and adaptation to local environment; strict limitations of chemical inputs and external input use (IFOAM, 2020). Farmers' member application was provided to farmers from twelve districts: Muang District, Don Mot Daeng District, Muang Sam Sip District, Warin Chamrap District, Khanthararom District, Samrong District, Sawang Wirawong District, Na Yia District, Nam Yuen District, Trakan Phuetphon District, Phosai District, Khemmarat District, and Tan Sum District.

Training and workshops on organic farming which includes the method of how to grow organic vegetables and fruits were organized for the farmers. One of the workshops included the farmers discussing the inspection certification system of the certifier called *Gin Sabaijai* PGS (Participatory Guarantee System). Standards of the PGS included the production and processing standards, standards of selling products at the green market, the mechanisms of the working committee consisting of both public and private sectors such as scholars, entrepreneurs, provincial public officers, and consumers, and an organic agriculture farm practice database to trace organic products to their origin. Basic information collected from 88 farmers, indicated that their incomes from the farm products after participating in the project increased 16.28%.

The second measure was at least eighty farmers participating in the project passing the organic guarantee system. The assessment indicated 75 farmers or 93.75% passed the Gin Sabaijai Participatory Guarantee System.

Farmers received training on the organic agriculture knowledge and organic agricultural inspection. Knowledge exchange meetings were organized where farmers from several districts with the same profession came together to share their knowledge on techniques and experiences of organic farming. Follow-up and consulting activities were run for the farmers to prepare the organic inspection. Initially, 95 farmer members out of 170 passed the inspection by internal control system inspectors (ICS). After the second inspection, the certification committee met and finalized that 75 farmers' farms and theirs were certified *Gin Sabaijai* PGS. Only 75 farmers passed the organic standards after the second inspection were as a result of the ICS inspectors inspected the farmers' farm and they verified that the farms met the organic standard even though they were unqualified. It was the reason why when certifying agent reviewed the inspection report, twenty farmers members out of 95 failed to comply with organic standards. It showed that ICS inspectors were inexperienced. Therefore, the ICS inspectors were needed longer and intensive training period.

The third benchmark was the establishment of 8 organic agricultural models and learning centers local communities. The assessment revealed that organic agricultural models and learning centers were created in eight communities, a 100% success rate. These centers were constructed as a model learning center to expand the organic farming practices and knowledge of Ubon Ratchathani. The centers were founded in Warin Chamrap District, Muang Sam Sip District, Sawang Wirawong District, Tan Sum District, Nam Yuen District, Muang District, Samrong District, and Na Yia District.

Organic market chain promotion

The promotion of organic markets had only one indicator, namely the four green market models set up across all communities.

The four green market models were set up in four communities. Following the first part of the project, it assisted the organic farmers to participate in the green supply chain. The organic agricultural products were sold both at local and provincial green markets.

Eventually, five green markets were established with another one extra which was more than what was expected. The five green markets were set up to sell organic products and their surplus after the household consumption was met. The markets were located at Ubon Ratchathani Cancer Hospital, Warin Chamrap Hospital, Huai Wang Nong Reservoir, Khu Mueang Village, and Sunee Mall in the city center of Ubon Ratchathani. The sellers at the green markets varied between 5-10 farmers. The farmers who deal in 5 markets are the different farmers. Basic information collected from 88 farmers, indicating that their incomes from farm products after participating in the project increased 16.28%. The organic products sold at the markets included rice, vegetables, fruits, local and seasonal food, and cooked food. Income from the market ranged from 500 to 8,000 baht per person.

The local green markets were established to sell the surplus of the organic products once the household consumption was met, and to distribute the organic vegetables and fruits to the communities. Moreover, the local green markets were important channels for exchanging knowledge of organic agriculture and igniting the consumers' inspiration to grow vegetables at their homes. The local green markets were established at Samrong District, Na Yia District, Khu Muang District, and at Huai Wang Nong Reservoir.

The provincial green markets were located at Sunee Shopping Mall and Ubon Ratchathani Cancer Hospital. This kind of market was set up for the farmers who plan to primarily produce and sell the organic products so that they were distributed to urban customers and new consumers of organic products through the provincial market place.

Organic consumption chain promotion

To promote the organic consumption, there were five main indicators: (1) to have at least fifteen schools to encourage students to consume organic products in their communities; (2) to reduce the number of overweight and obese students to less than 10%; (3) to encourage school students and farmers to consume food with organic products, as well as ensure that 50% of the participants consume the recommended 400 grams of fruits and vegetables a day; (4) to ensure that at least 65% of the target consumers gain a better understanding of nutrition and adopt healthier eating behaviors and; (5) to ensure the development of at least one local policy to promote safe and adequate consumption of fruits and vegetables or to decrease the number of obese and overweight people.

The fifteen schools promoted students to consume organic products in their communities and to use the lessons they learned to share their knowledge with the rest of the community. The evaluation showed that 19 schools applied for the project. A delegation of students and teachers attended the healthy food and nutrition awareness program. The students were educated on the advantages of consuming safe vegetables and fruits and disadvantages of soft drinks and junk food. The goal was to alter the bad eating habits of students.

After the project ended, the research revealed that seventeen schools, with two more than what had been expected, participated in the project. The students changed their habits and had healthier diets. Furthermore, to promote a healthy and organic diet at the schools, some organized the showcases of organic farming and small animal husbandry. The organic agricultural products in the communities were supplied for the school lunches. However, 2 schools were unsuccessfully developed due to restraints of staff and executives.

The second indicator was to reduce the number of overweight and obese students to less than 10%. The weight and height of the students before the launch of the project was compared with their weight and height after the project was completed. The criterion of teenage obesity was set by the Bureau of Nutrition, Department of Health (n.d.). The Bureau of Nutrition has 6 categories to measure health of students: (1) underweight (2) borderline underweight (3) healthy weight (4) borderline overweight (5) overweight and (6) obese. Overweight and obese was classified into categories.

Data collected from 226 students between the ages of nine and fifteen from nineteen schools before launching the project showed twelve obese students or 5.31%; thirteen overweight students or 5.75%; and twelve borderline overweight students or 5.31%. Accordingly, 25 students or 11.10% were considered obese (obese and overweight students).

After the project ended, the data collected from the 235 samples revealed eight obese students, or 3.40%; 10 overweight students, or 4.26%; and 19 borderline overweight students or 8.09%. Eighteen students or 3.44% were classified as obese (obese and overweight students). It was shown that after the project, the frequency of obese students and overweight students decreased from 11.10% to 7.66% (Table 1).

Table 1: Student's Frequency of Overweight and Obesity

Student's frequency of overweight and obesity	Before the project (226 students)	After the project (235 students)
Obese students	12 (5.31%)	8 (3.40%)
Overweight students	13 (5.75%)	10 (4.26%)
Total	**25 (11.06%)**	**18 (7.66%)**

Concerning junk food consumption, processed and ultra-processed food, sugary drinks, soft drink and other convenient food items (Committee on World Food Security, 2017), before the project, the data collected from 226 students showed that 78 students or 34.51% consumed less than 75 grams a day of junk food while 148 students or 65.49% consumed more than 75 grams a day. After the project was completed, the data showed that 122 students or 51.91% consumed less than 75 grams a day of junk food while 98 students or 41.70% consumed more than 75 grams; and fifteen students or 6.38% stopped consuming junk food. The total number of students consuming less than 75 grams of junk food per day was 137 students or 58.30% (Table 2).

Table 2: Student's Junk Food Consumption

Student's junk food consumption	Before the project (226 students)	After the project (235 students)
< 75 grams a day	78 (34.51%)	8 (3.40%)
> 75 grams a day	148 (65.49%)	10 (4.26%)
Non-consumption of junk food	0	15 (6.38%)

Before the project, 226 students consumed sugary soft drinks. The research exhibited 25 students or 11.06% consumed soft drinks less than 75 milliliters a day and 201 students or 88.94% drink it more than 75 milliliters a day. After the project, the study found that two students or 0.85% still consumed soft drink and the amount was less than 75 milliliters a day. 191 students or 81.28% consumed it more than 75 milliliters a day. Eventually, 42 students or 17.87% stopped consuming soft drinks at the end of the project. The total number of students drinking soft drinks less than 75 milliliters a day or who stopped drinking soft drinks was 44 students or 12.72% (Table 3).

Table 3: Student's Soft Drink Consumption

Student's soft drink consumption	Before the project (226 students)	After the project (235 students)
< 75 milliliters a day	25 (11.06%)	2 (0.85%)
> 75 milliliters a day	201 (88.94%)	191 (81.28%)
Non-consumption of soft drink	0	42 (17.87%)

The third indicator was to encourage at least 50% of school students and farmers to consume safe food, including the recommended 400 grams of fruits and vegetables a day.

The data collected before the project of 226 students found that 164 students, or 72.57%, consumed less than 400 grams of vegetables a day, 54 students, or 23.89%, ate approximately 400 grams a day, and 8 students, or 3.54%, consumed more than 400 grams a day.

After the project, 142 students, or 60.43%, consumed less than 400 grams of vegetables and fruits a day, 64 students or 27.23% consumed approximately 400 grams a day, and 29 students or 12.34% ate more than 400 grams a day (Table 4).

Table 4: Student's Vegetable and Fruit Consumption

Student's vegetable and fruit consumption	Before the project (226 students)	After the project (235 students)
< 400 grams per day	164 (72.57%)	142 (60.43%)
400 grams per day	54 (23.89%)	64 (27.23%)
> 400 grams per day	8 (3.54%)	29 (12.34%)

The collected data from 88 farmers before the project indicated that 38 farmers, or 43.18%, consumed less than 400 grams of vegetables and fruit a day, 38 farmers, or 43.18%, consumed around 400 grams a day, and twelve farmers, or 13.64%, consumed more than 400 grams a day. After the project, the research showed that fourteen14 farmers, or 15.91%, consumed less than 400 grams of vegetables and fruits a day, 43 farmers, or 48.86%, consumed around 400 grams a day, and 31 farmers, or 35.23%, consumed more than 400 grams a day (Table 5).

Table 5: Farmers' Vegetable and Fruit Consumption

Farmers' vegetable and fruit Consumption	Before the project (226 students)	After the project (235 students)
< 400 grams per day	38 (43.18%)	14 (15.91%)
400 grams per day	38 (43.18%)	43 (48.86 %)
> 400 grams per day	12 (13.64%)	31 (35.23%)

The fourth indicator was that at least 65% of the target consumers, namely the customers participating in the organic festival and the ones purchasing the organic products at the green market, adopted healthier eating behaviors. The project organized activities and a media campaign to educate the public on nutrition and promote healthier eating habits. The data collected from 420 customers showed that 76.66 per cent of them applied the knowledge they learned from the activities to their daily lives.

The last indicator was that at least one local policy had to be formulated either to promote food safety along with the consumption of fruits and vegetables or to decrease the number of obese and overweight people. "Na Yia Charter of Organic Agriculture" was created with the cooperation of the local community, along with the Foundation of Sang Sook Media, the Committee of the Agricultural Development at the district Level, Na Yia Hospital and Na Yia District Public Health Office. In addition, two memorandums of understanding were signed; one between the Muang District Learning Center of Organic Agriculture and public agents at the Muang District

and the second between Sawang Wirawong District Learning Center of Organic Agriculture and public agents in that area.

4. DISCUSSION

The study demonstrated that the project achieved all indicators. These include the three related to the promotion of a full-circle promotion of organic agriculture: organic product supply chain; organic market chain; and organic consumption chain. Organic product supply chain: (1) to identify at least 100 organic farmers; (2) to have at least 80 farmers farmer participants pass the organic guarantee system; and (3) to establish eight organic agricultural model and learning centers in 12 communities. It included one indicator of organic market chain promotion i.e., 4 green market models set up across all communities. And it included a further five indicators of organic consumption chain promotion: (1) to have at least 15 schools to encourage students to consume organic products in their communities; (2) to reduce the number of overweight and obese students to less than 10%; (3) encourage school students and farmers to consume food with organic products, while also ensuring that 50% of participants consume the recommended 400 grams of fruits and vegetables a day; (4) ensuring that at least 65% of the target consumers gain a better understanding of nutrition and adopt healthier eating behaviors and; (5) ensure the development of at least one local policy to promote safe and adequate consumption of fruits and vegetables or to decrease the number of obese and overweight people.

According to the research result, it showed that the project was successful due to the following nine factors: (1) support of executives such as school director support; (2) competent project manager and staffs; (3) team work of internal and external organization such as cooperation of project teamwork with public agencies; (4) well-planned and comprehensive project such as full-circled promotion of organic agriculture; (5) flexibility of project proceeding like working schedule adjusting to stakeholders' available time; (6) clear and extensive communication and public relation like frequent communication with all project members; (7) problem solving such as every day dealing with project members (8) identifying target group and indicator such as identifying target group of farmers, project areas, and schools; and (9) proceeding and monitoring the project such as monitoring and following up the project.

The finding of this research corresponded with some study results of "The Success Factors and Problems in the Project Management at Mahidol University International College". The study found out that there were four factors influencing the success factor in the project management: (1) personnel factor such as executives supporting the projects; executives and project managers setting the priority of the project; internal and external staffs with good cooperation and teamwork (2) financial factor like adequate budget; well-organized budget system (3) process factor such as well-planned project; flexibility of the project; and problem-solving capacity; and (4) other factor such as explicit and comprehensive communication and public relation.

Moreover, this research finding was agreeable with some aspect of finding of "Factors affecting the success of the project of Department of Industrial Promotion, Ministry of Industry". The research identified internal and external factors affecting project achievement. Internal factors consisted of 4 aspects: (1) factor of project data including project duration, budget, project staff, resource management, problem solving, and project participants' need; (2) factor of head of the project consisting of leadership, project management such as job assignment, identifying target group and indicator including proceeding and monitoring the project and stimulating project staffs to achieve the project; (3) factor of project team comprising of team work, understanding of project objectives, duty responsibility, project cooperation, and accepting others' opinions and suggestions; (4) organizational factors including hierarchical structure, authorities and responsibilities. External factor was uncontrolled factors; however, they impacted on project proceeding and project success. Thus, it depended on the capability of organization to adapt with the external factors. (Nitthayharot, 2019)

5. FACTORS IN ACHIEVEMENT OF PROMOTING ORGANIC FARMING PRODUCING, MARKETING, AND CONSUMING

The achievement of promoting organic agriculture was thorough the activities mentioned above as they support the organic farming in these following aspects.

First of all, the recruitment of farmers to the project was arranged through many channels such as Line group, local cable TV news, public radio station, webpage, and local leader community of target area. The meetings were organized in each target area to inform and explain the farmers in details of the project and the

process of organic certification of *Ginsabaijai* PGS. The project fulfilled the indicator of at least 100 organic farmers and at least eighty farmer participants pass the organic guarantee system since the recruitment of the farmers was more than 100 farmers and recruited both the partially organic experienced and unexperienced ones. The experienced shared their organic farming practices to the unexperienced ones.

The mechanism of supporting the farmers to pass the organic certification was another crucial factor. The production such as organic seeds, organic fertilizers, and organic insecticide were important materials. Therefore, the project cooperated with both public and private organizations to be the supply channels for the organic framing production. The knowledge and workshop of organic agriculture was indeed the essential element. The training and workshop of organic farming and practices were organized. They are for fruit and vegetable farms; the workshop on organic fertilizer production, fermented water, biological substances, biological insect repellent, and food processing workshop. Other activities include the workshop on soil nutrients and how to apply local materials like sugarcane, cassava pulp, and napier grass to increase crop nutrients and on the job training of organic inspector, organic inspector assistant, and organic certification committee.

Top organic farming experts in the province were invited to be guest speakers to share their experiences and opinions. They inspired the farmers to recognize the significance the standard of local organic farming. Moreover, the meetings of the experienced farmers with the unexperienced ones in each target area were set up frequently so that they exchange their experiences, problems, and solutions. Channels of communication between farmers and project staff were provided regularly for recommendations to the farmers. The follow-up meetings after training and workshop were aligned at each target area to promote the farmers' progress in their organic farming and production.

Furthermore, a variety of partners took part in the project of *Ginsabaijai* PGS regulations and inspection. They were provincial public health officers, hospital officers, provincial agriculture officers, provincial commercial officers, and farmers. Such participation resulted in the trust among all the stakeholders in organic certification system and the green markets that support the organic products from the farmers.

In terms of promoting organic consumption and marketing, there were several factors that caused the project successful in this indicator.

Among nineteen schools participating in the project, one school had the least numbers of students with 38 students and one big school had the most numbers of students with 1,513 students. 17 schools had their own agricultural spaces. Every community of each school had its own agricultural local philosopher who did organic farming to educate and train the school students about organic agriculture. Many activities had operated to provide the schools food literacy; for example, student camps to educate safety and healthy diet and healthy eating were organized 2-3 times at each school. The students and teachers were taught how to do organic farming. Each school had its own activity to promote safety and healthy food and consumption such as organic farming area at the school, organic mushroom greenhouse, school cooperative shop without soft drink and junk snack, green market at school, and serving organic meal at school with community organic supplies. In addition, the schools were promoted to create short video clip about organic farming at their school. It can be said that literacy of safety food safety and organic agriculture should start when students are young since education is a fundamental area of engagement to raise awareness of organic values and sustainability of organic agriculture.

Five green markets located in different part of towns were established to promote organic producing to ensure that there were markets to distribute their yields. The green markets were the medium promoting organic food consumption as well. The activity "Consumers meet farmers", "Gin Sabaijai Festival" (Organic Festival), and informal seminars were meant to assure the customers the certified organic products and to educate and encourage consumption of organic products. Last but not least, local government officers such as sheriffs, agriculture officers, and public health officers were invited to participate in the activities to make them realized that they could play the important role to local policy formulation and implementation.

Project with Sustainable Development Goals

The Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 was applied to illustrate the remarkable strength of the project. The SDGs include seventeen goals that provide an integrated approach to sustainable development across various social, economic and environmental dimensions (UNDP, 2021) which include (1) No poverty; (2) Zero hunger; (3) Good health and well-being; (4) Quality education; (5) Gender equality; (6) Clean water and sanitation; (7) Affordable and clean energy; (8) Decent work and economic growth; (9) Industry, innovation and infrastructure; (10) Reduced inequalities; (11) Sustainable cities and communities; (12) Responsible consumption and production; (13) Climate action; (14) Life below water; (15) Life on land; (16) Peace, justice and strong institutions; and (17) Partnerships for the goals. While the project touched on several of these goals, it contributed primarily to SDG 12, namely to "Ensure sustainable consumption and production patterns". According to the UN (2022) sustainable consumption and production is:

"...about doing more and better with less. It is also about decoupling economic growth from environmental degradation, increasing resource efficiency and promoting sustainable lifestyles. (It) can also contribute substantially to poverty alleviation and the transition towards low-carbon and green economies."

The Global Goals for Sustainable Development (2021) mention eleven targets for achieving SDG 12 (responsible consumption and production). These targets are: (1) to implement the 10-Year Sustainable Consumption and Production Framework; (2) to conduct the sustainable management and use of natural resources; (3) to halve global per capita of food waste; (4) to conduct the management of chemicals and waste; (5) to substantially reduce waste generation; (6) to encourage companies to adopt sustainable practices and sustainability reporting; (7) to promote sustainable public procurement practices; (8) to promote universal understanding of sustainable lifestyles; (9) to support developing countries' and the technological capacity for sustainable consumption and production; (10) to develop and implement tools to monitor sustainable tourism; and (11) to remove market distortions that encourage wasteful consumption.

This project primarily complied with target 8, which was to promote universal understanding of sustainable lifestyles. The project operated various activities to promote understanding of sustainable lifestyles. Firstly, the project promoted the organic farming and provided 170 farmers the knowledge about the organic farming, standards, and techniques in twelve districts, with 75 farmers passing the organic guarantee system. In addition, the farmers were encouraged to consume the recommended 400 grams of fruits and vegetables a day of their own organic products. Second, eight organic agricultural models and learning centers in eight communities and five green market models in the communities were established. Third, the project encouraged nineteen schools to grow organic products and to use organic products in school lunch and further encouraged the consumption of the recommended 400 grams of fruits and vegetables a day of their own organic products from the schools and the communities. Fourth, activities and green market festivals were organized at various schools, department stores, and organic farms to ensure that the target consumers gain a better understanding of nutrition and adopt healthier eating behaviors. For example, the activity "Consumers meet farmers" and "*Gin Sabaijai* Festival" (Organic Festival) were used as opportunities to educate and promote consumption of non-chemical products, pro-environmental food purchasing behavior, environmentally sustainable products, and to help change perceptions of nutritional value of organic products. Finally, the project advocated the development of the local policies to promote the organic farming. "Na Yia Charter of Organic Agriculture" and two memorandums of understanding were signed between Learning Center of Organic Agriculture and public agents. One between the Muang District Learning Center of Organic Agriculture and public agents at the Muang District of the second between Sawang Wirawong District Learning Center of Organic Agriculture and public agents at Sawang Wirawong District.

The project's objectives and activities were predominantly focused on promoting the organic agriculture. According to the eleven targets of the Global Goals for Sustainable Development, the organic farming is associated with target 2 (Sustainable Management and Use of Natural Resources) and target 4 (Responsible Management of Chemicals and Waste).

In terms of sustainable management and use of natural resources, Muralikrishna and Manickam (2017) stated:

"Natural Resource Management (NRM) refers to sustainable utilization of major natural resources such as land, water, air, minerals, forests, fisheries, and wild fauna and flora. Together, these resources provide the ecosystem services that provide better quality to human life."

Organic farming is another approach to sustainable management and utilization of natural resources. Results from fifty studies suggested that in terms of energy use for almost all crop types, organic agriculture is better than the conventional farming. In other words, the organic farming is a more energy efficient since it concentrates on sustainable production. Moreover, organic farms tend to apply more renewable energy and there is less impact upon ecological system (Smith et al., 2014).

There has also been a growing recognition for the need to responsibly manage agricultural chemicals and waste especially by lessen their discharge into the atmosphere, aquatic environments, and soil in order to diminish their negative impacts on human and the environment (United Nations, 2021). Since synthetic pesticides are forbidden in the organic agriculture, there is less risk of synthetic insecticide pollution into soil

and water. In addition, the organic farming based on local and renewable resources of integrated animal and crop production can decrease nutrient pollution.

6. CONCLUSION

The evaluation revealed that the project attained all expected indicators to promote the full-circle promotion of organic agriculture including producing, marketing, and consuming even when the availability of staff and the overall timeframe for completing the project was sometimes restricted. The project could be a good model for promoting food safety and organic agriculture in other communities. The highlight of this project was the successful promotion of organic farming and healthy food consumption to school students. In addition, the project's objectives and activities aligned with the United Nations Sustainable Development Goals in many respects, especially in terms of sustainable consumption and production.

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