International Relations on Indonesian Foreign Policy Conference 2022
Volume 2023
http://dx.doi.org/10.11594/nstp.2023.3405

NST Proceedings
OPEN ACCESS

Conference Paper

The Role of Penta Helix in Implementing Zero Hunger (Case Study: Social Project "Fight Hunger to Achieve Our Better Future")

Januari Pratama Nurratri Trisnaningtyas, Raden Diman Satria Juliartha*, Ariesa Maryam Kusuma, Maulana Muhammad Daffa

Department of International Relations, Universitas Pembangunan Nasional "Veteran" Jawa Timur, Surabaya 60294, Indonesia

Corresponding author:
E-mail:
dimassatriajuliartha@gmail.com

ABSTRACT

Food security has become a prominent issue within sustainable development goals. The high number stunting and malnutrition in Indonesia proves that the zero hunger of SDGs has not been optimally achieved. The government and community face various challenges to end hunger, such as economic limitation and access to the nutritious and sufficient food. This paper will examine how to tackle food security in Indonesia by implementing "Fight Hunger to Achieve Our Better Future" Project. This project was initiated by student of International Relations Department of UPN "Veteran" Jawa Timur as a project-based study of Sustainable Development. Using the concept of sustainable development and food insecurity as well as penta helix model, there are three series of activities carried out to contribute in ending hunger in Indonesia, namely catfish farming, food security seminar and webinar series, and petition signing. The project successfully involving 350-400 people consist of local communities, village government, high school and university students, medium-small enterprises (UMKM) and media to support zero hunger campaign. This paper argue that the involvement of the penta helix actors would perform better to achieve food security in Indonesia, which included in the SDGs number two.

Keywords: Food security, penta helix model, social project, sustainable development

Introduction

Hunger is a particular problem that must be addressed immediately. One form of hunger is malnutrition, which will affect human health and thinking ability. Beside stunting, another factors used to measure the level of malnutrition is anemia rate in women of reproductive age, diabetes among men, and obesity among men and women (Global Nutrition Report, 2022). Hence, the habit of consuming fast food and unhealthy food can triggers malnutrition. In addition, unhealthy lifestyles such as stay up late and irregular diet are also affecting daily nutritional adequacy. Although decreasing, the number of stunting and malnutrition in Indonesia still hit 24.4% in 2022, making it the second highest in Southeast Asia (Murthi, 2022).

The phenomenon above urge the government to take steps to prevent various problems that arise from food security, such as malnutrition and acute illness. The right handling policies can encourage the improvement of the quality of human resources in the future as well as maintaining national economic stability. In order to achieve a no hunger Indonesia in 2030, Jokowi administration has implemented several policies regarding food security. Some implemented policy in this aspect including local food diversification, strengthening government's rice reserves, subsidized fertilizer policy, and farmer corporation based self-sustaining-food centers (www.kemenkeu.go.id, 2022).

How to cite:
Trisnaningtyas, J. P. N., Satria J. R. D., Kusuma, A. M., Daffa, M. M.. (2023). The role of penta helix in implementing zero hunger (Case study: Social project "Fight hunger to achieve our better future"). *International Relations on Indonesian Foreign Policy Conference 2022*. NST Proceedings. pages 29-37. doi: 10.11594/ nstp.2023.3405

On the other hand, a perfect government policy without people involvement will result nothing. Therefore, people awareness on food resilience should also be improved. Stunting prevention starts from fulfilling the nutrition of pregnant women and children under five. A healthier lifestyle should be campaigned to prevent such a chronic disease and obesity.

Apart from the government, the role of other stakeholder such as academics, business/corporate, community and media is also prominent to support zero hunger goal. Contemporary research from the academics can be used to implementing policy in food resilience. Business/corporate support the goal through the healthy product or corporate social responsibility (CSR) which engage in the field of food security. Community and media responsible in promoting a good lifestyle and assist people to achieve self-sufficient food resilient through the grass-root movement.

This paper will examine the role of penta helix, particularly academics and community in helping the improvement of food security in the society. "Fight Hunger to Achieve Our Better Future" project is one of the example in eradicating hunger by empowering society to fulfill their needs, particularly in food needs. This project shows the important of academics involvement and society awareness in achieving zero hunger. Through the lens of sustainable development, food security and penta helix model, this paper argue that the synchronization and integration of all the elements above will accelerate the improvement of human resources quality as well as eradicates hunger in Indonesia.

Material and Methods

This paper is a qualitative research based on field research. The method allows researchers to collect raw data in the field through many ways, such as direct participation, observation, and qualitative interviews (Babbie, 2010). As the secondary sources, this paper uses data from previous research articles, books, and news articles in the similar field to support the arguments. Object of this research is food security awareness of people ranging from high school student to local residents in Sidoarjo, Jawa Timur. In analyzing the data, this paper uses the concept of sustainable development and food security combined with the penta helix model to find the significance of the actor involved in achieving zero hunger goal.

Sustainable development

The concept of sustainable development refers to the improvement of human development without jeopardizing future generation as well as ecological aspect (Klarin, 2018). Based on the idea above, the United Nations urged all its member states to adopted the 17 sustainable development goals (SGDs) for peace and prosperity for people and the planet, now and into the future (United Nations, 2015). Zero hunger was one of the 17 SDGs aiming for a world free of hunger by 2030. There are five main indicators of zero hunger, which the implementation is according to the needs and condition of each states. Indonesia adopted these five main indicators: (1) to end hunger and ensure access to safe, nutritious and sufficient food to all people; (2) to end all forms of malnutrition and achieving targets on stunting and wasting in children under 5; (3) double the agricultural productivity and incomes of small-scale food producers; (4) ensure sustainable food production systems and implement resilient agricultural practices; and (5) maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals. Hence, this project aims to escalate the capability of local communities in fulfilling the food needs through community self-sufficiency. Furthermore, this project also aims to promote awareness of food security, including accessibility and affordability to access food by all people, including the youth, children under five, pregnant women, and elderly.

Food security

Food security is one of the seven dimensions of human security. Food security refers to the availability of adequate food supply for all people at all times (Kumar). Food security can be achieved if:

> "all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (World Food Summit, 1996).

Figure 1. Food security indicator (Ravensbergen, n.d.)

The figure 1 above explains five primary indicator of food security. First, the availability refers to the local food, particularly the fresh agricultural products such as fruits and vegetables. Second, accessibility consists of political, economic, and social conditions to obtain adequate resources (Ravensbergen, n.d.). Third, affordability emphasizes at the economic capability, in this regards, food price that suits the income level of the people. Fourth, healthy lifestyle consists of healthy body mass index (BMI), total daily calories intake, low child stunting, good sanitation and hygiene, and urban recreation. Last, food risk means to avoid expired and inadequate food.

"Fight Hunger to Achieve Our Better Future" project tries to combine these five-food security indicators into some activities that improve food resilience of the people, for example: catfish farming and food security campaign to increase people awareness of self-sufficient in food needs.

Penta helix model

Penta helix model is a collaborative governance of initial conditions, institutional design, leadership, and collaborative processes (Kismartini et al., 2020). Furthermore, this model elaborates a concepts occurring during cross interactions and shows how collective thinking can be connected through organization or group participation (Kismartini et al., 2020). Interaction between stakeholders in penta helix model is expected to bring up a better synergic work and a stronger framework in achieving zero hunger target of sustainable development.

The figure 2 explain about penta helix model consists of five stakeholders: academics/research/university, private/business, media, government, and community. Stakeholders responsible for their role in escalating food security as well as promoting food resilient. In implementing this penta helix framework, "Fight Hunger to Achieve Our Better Future" project invites some stakeholder to take part in promoting food security. Students as an academic representatives act as the initiator of the project. Community ranging from high school student to local resident involved as the participants. Subsequently, the government in collaboration with the private sectors act as trainer and disseminate self-sufficiency strategy to fulfill food needs, which can be implemented by the locals. Meanwhile, media play a role as a promotion media to support food security through news articles, YouTube content, Instagram campaign, and seminar as well as webinar series in strengthening food security.

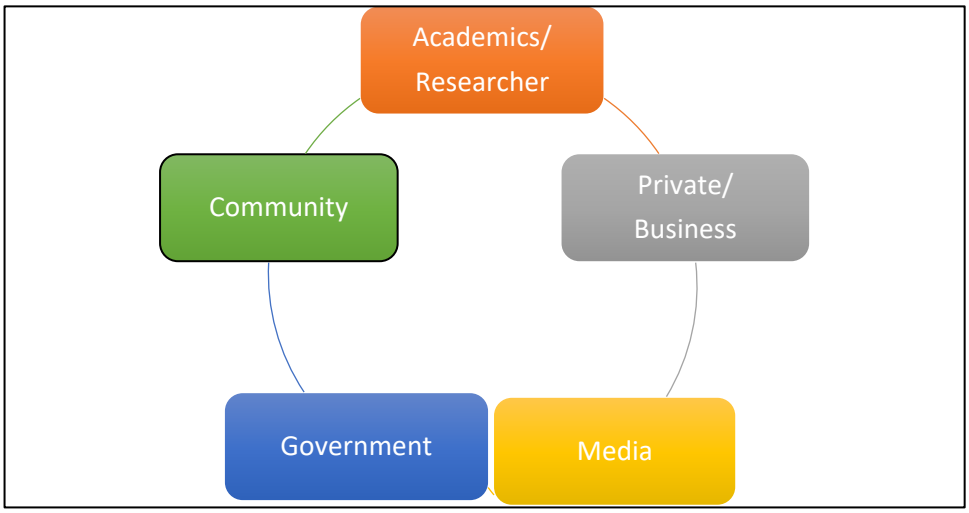

Figure 2. Penta helix model of zero hunger target

Results and Discussion

"Fight Hunger to Achieve Our Better Future" project conducted several activities contribute in achieving zero hunger target. There are three main activities, first, strengthening food security of local resident through catfish farming; second, socializing zero hunger and food security through series of seminar and webinars with expert speakers; third, petition signing to promote food resilience. Not only engage with locals, this project successfully obtained sponsorship from several companies that support the zero hunger program, such as Nasi Goreng 69, Xi Boba, and Benowo sugar factory. This also proved that the role of business/corporate were significant in supporting the zero hunger goal. This program last for two months, November-December 2022 and successfully involve 300-400 people from various background, ranging from local community, village government and government expert team, high school and university students, small-medium enterprises (UMKM), and media to contribute in achieving zero hunger target.

Strengthening food security through catfish farming

This activity aimed to help local community in maintaining sustainability of food security by creating catfish farm and sell the fresh product to the market. Main object of this activity is people of Desa Bligo, Candi, Sidoarjo, including their community group, youth, and village government. The creation of catfish farming were divided into seven main stages: (1) tarpaulin pond preparation, (2) seed preparation and stocking, (3) feeding, (4) selection/grading, (5) maintenance, (6) pest and disease management, and (7) harvesting.

a. Tarpaulin pond preparation

   All materials for assembling the pool delivered on November 21, 2022 and installed immediately. First, local people and student involved make a foundation in a round shape using cement or other related materials. They also build the edge up to 10 cm high using bricks to bolster the tarpaulin pool. After the foundation dried up, they installed iron toil around the tarpaulin. Subsequently, they fill the foundation with water up to 30-50 cm high and soak throughout the night. On the next day, replace the water using probiotics-contained water (Em4 and molasses) for the next stage. Settle the water up to 7 days to allow the bacteria to multiply until the water is greenish/brownish and the onset of mosquito larvae.

Figure 3. Pool assembly
(source: team documentation)

Figure 4. Tarpaulin pond construction
(source: team documentation)

b. Seed preparation and stocking
Due to the limited spaces, catfish seedling delivered in several term and restored in some of the community members. After the pond has ready, the local community filled it with the catfish seedling. Stocking of catfish were brought in the morning or evening to avoid direct exposure to sunlight. The first seven days, they maintained water level in 30-45 cm, while the next days can be added up to 75 cm. it is also important to keep catfish stocking density up to 300-500 heads/m2.

Figure 5. Catfish seedling stocking (source: team documentation)

Figure 6. Catfish seedling distribution with Ulamku Eco (village community)

c. Feeding
The local community fed the catfish daily according to the feeding hours, usually 2-4 times daily. Catfish seeds were given the smallest size portion contained 32-33% of protein and soaked into Em4 probiotics and molasses water for ± 5 minutes. Once the food is expanded, it can be stocked to the pond.

d. Selection or grading
Selection means to categorize the fish based on their size. Once the fish is three weeks old to one month old, the local community proceed the selection/grading. This stage aims to avoid cannibalism as well as increases feed efficiency and care providing.

e. Maintenance
Not only monitoring the condition of fish, the local community was also maintaining the pond to keep its quality. Maintenance process includes changing the water periodically (once a week) and adding probiotics to the water to reduce odors. Once the water became dark green/brownish yellow/brownish green and started to smell bad, it is the sign to change the water. In this stage, student of *"Fight Hunger to Achieve Our Better Future" Project* helped the local to change the pond water through community service.

Figure 7. Maintenance of Tarpaulin Pond (Source: Zero Hunger Act Documentation)

f. Pest and disease management
Pest and disease management aims to prevent the onset of disease affecting the fish. This stage consist of two ways. First, gives multivitamins to the fish to increase the immune system, such as giving ripe pace fruit, papaya leaves, or moringa leaves. Second, keep an eye of the water living media by maintaining a good water conditions. Ignoring the pest and disease management increasing the probability of sick/stressed fish. Sick/stressed fish showing some signs, such as hanging on the surface, unguided movement/loss of balance, decrease appetite, wound/white patches around their body, flatulence, and tend to gather at the edge of the sewer.

g. At this stage, local community and student found that some fish showed a sign of stress due to the late of water changing. However, this is not a big deal as the fish behave as At this stage, local community and student found that some fish showed a sign of stress due to the late of water changing. However, this is not a big deal as the fish behave as usual once they change the water and put probiotics in it.

Figure 8. Fish hanging due to stress (Source: team documentation)

h. Harvesting
After 2-3 months old and weight around 250gr/heads, the fish are ready to harvest. This is the end of the long phase cycle. Catfish harvesting aims to strengthen food resilience through community self-sufficiency. Furthermore, the exceed amount of the fish can be sold in the market. This also improve economic empowerment of the community, which indirectly escalate food security from economic perspective.
After the first harvesting, student of "Fight Hunger to Achieve Our Better Future" Project along with the local community organized evaluation session with village leader and some of the livestock expert. This sharing and evaluation session was held to maintain the sustainability of the current project. Furthermore, this catfish farming project was also brought to the next activities involving high school student, aiming to promote food security to the youth.

Seminars and webinars series with experts

Seminars and webinars series aimed to improve the awareness of locals in maintaining food security. The first seminar was conducted in Madrasah Aliyah Bilingual Muslimat NU Sidoarjo on November 30, 2022. More than 200 students excitedly attending this event and discussing about zero hunger target, such as the causes of hunger, impact, and urgencies to achieve zero hunger target. The speaker of this seminar were students of International Relations department of UPN "Veteran" Jawa Timur, which enroll in sustainable development subject. Furthermore, this event was also used for disseminating sustainable development goals of the United Nations, particularly goal number two of zero hunger.

Figure 9. Speakers of food security seminar (Source: team documentation)

Figure 10. High school student joining seminar (Source: team documentation)

Second seminar was held in December 11, 2022 in a form of webinar titled "be the Savior of Hunger and Realizing Food Security". There were two expert speakers in this webinar: Ira Dwijayanti, S.Gz., M.Sc (lecturer of Nutrition Department, Universitas Nahdatul Ulama Surabaya) and Yusak Arifin, S.Pd. (Representative of local community in Bligo). This webinar particularly targeting the youth, ranging from high school to university student as well as public participants. In the first session, Ira Dwijayanti explained about malnutrition and stunting, adolescent nutritional status, and government roles in eradicating hunger. On the other hand, Yusak Arifin explained his experience in catfish farming as an effort to improve people's self-sufficiency in food resilient. The two hours webinar session was smoothly running along with the intense discussion between expert speakers and participants regarding food resilient and zero hunger target.

Petition signing

In addition to the activities above, this project also included petition signing to promote zero hunger target of SDGs number two. The activity titled "One Sign for Preventing Hunger" was conducted on December 24, 2023 at Taman Bungkul, Surabaya. Through this petition signing, student of International Relations department of UPNVJT involved in this project was also educate participants about zero hunger, food security and related topics. Furthermore, the students were also distributed small gift containing instant noodle to those who needs, such as the low-middle income people around Taman Bungkul, Surabaya. As a result, there are 170 participants voluntarily sign the petition and triggered to contribute in eradicating hunger in Indonesia.

Figure 12. Petition signing
(Source: team documentation)

Figure 13. Petition sign volunteers
(Source: team documentation)

As this project aims to promote sustainable development goal number two of zero hunger and increasing food resilient of the local community, this project was also promoted through social media. The students in this project documenting all the activities through Instagram account @zerohunger_act. This Instagram content act as a media, which contribute to spread the awareness of public to maintain their food security in all matter. Furthermore, the content intended to inspire society regarding the food-self-sufficiency done by Ulam Eco community of Bligo village and similar movement to strengthen food security.

Conclusion

This project aims not only to contribute in strengthening food resilient to local community, but also disseminating the sustainable development goals of the United Nations, particularly the goal number two of zero hunger. “Fight Hunger to Achieve Our Better Future” Project successfully involved many stakeholders in the effort of achieving zero hunger target. Students of International Department UPNVJT as a part of academic initiated this project through sustainable development subject, which help local people in increasing the awareness of food security. On the other hand, local community, Ulam Eco of Bligo village in this regards, acted as the object of this project, which tries to fulfill their food needs through catfish farming.

Subsequently, business/corporate contributed indirectly by giving sponsorships to this project. Meanwhile, the government acted as the observant as well as the expert speakers in several activities included in this project. Finally, media involved in documenting all the activity and spread the awareness of food security towards society in general. This project successfully gather more than 300 people in its main three activities namely catfish farming, seminar and webinar series, and petition signing. This paper suggests duplicating similar action to spread people awareness of food security as a tool to achieve zero hunger target.

Acknowledgment

Thank you to the lecturers of the Sustainable Development course who have provided advice and direction through the Sustainable Development subject. We thank you very much for the village partner and its community, Ulam eco of Bligo Village, for their participation in our project.

Thank you for MA Bilingual Muslimat NU Sidoarjo for their excitement in joining the seminar and webinar series. Thank you for the expert speakers, Yusak Arifin, Bligo representative and Ira Dwijayanti, S.Gz., M.Sc., Lecturer of Nutrition department, Nahlatul Ulama University Surabaya. Finally, thank you for our sponsorship partner, Nasi Goreng 69, Xi Boba, and Benowo Sugar Factory.

References

Babbie, E. (2010). *The practice of social research.* Wadsworth: Wadsworth Cengage Learning.

United Nations. (2015). (2015). *The 17 Goals*. Department of Economic and Social Affairs. Retrieved from https://www.un.org/sustainabledevelopment/development-agenda

Global Nutrition Report. (2022). *Global Nutrition Report*. Retrieved from https://globalnutritionreport.org: https://globalnutritionreport.org/resources/nutrition-profiles/asia/south-eastern-asia/

www.kemenkeu.go.id. (2022). *Ini strategi pemerintah dorong ketahanan pangan untuk hadapi dinamika global*. (Accessed on 2022, September 14). Source from https://www.kemenkeu.go.id: https://www.kemenkeu.go.id/informasi-publik/publikasi/berita-utama/Strategi-Pemerintah-Dorong-Ketahanan-Pangan

Kismartini, Pumaweni, H., Prabawani, B., & Yusuf, I. (2020). Penta helix model for surtainable coastal area management in Bangka Island. *Conference: 6th International Conference on Social and Political Sciences (ICOSAPS 2020).* https://doi.org/10.2991/assehr.k.201219.058

Klarin, T. (2018). The concept of sustainable development: From its beginning to the contemporary issues. *Zagreb International Review of Economics & Business*, *21*(1), 67-94. https://doi.org/10.2478/zireb-2018-0005

Peng, W., & Berry, E. M. (2018). The Concept of Food Security. In book: Reference Module in Food Science. https://doi.org/10.1016/B978-0-08-100596-5.22314-7

Murthi, M. (2022, December 19). *Reducing Child Stunting: An Investment in the Future of Indonesia*. Retrieved from https://blogs.worldbank.org: https://blogs.worldbank.org/health/reducing-child-stunting-investment-future-indonesia

Ravensbergen, P. (n.d.). *Indicators for food security & resilience to climate change*. Retrieved from https://www.wur.nl/en/research-results/research-institutes/economic-research/research-topics-wecr/nourishing-the-world/ranking-your-city-on-food-security/indicators-for-food-security-resilience-to-climate-change.htm: https://www.wur.nl/en/research-results/research-institutes/economic-research/research-topics-wecr/nourishing-the-world/ranking-your-city-on-food-security/indicators-for-food-security-resilience-to-climate-change.htm

World Food Summit. (1996). *Report of the World Food Summit.* 13-15 November 1996. https://www.fao.org/3/w3548e/w3548e00.htm