



# Strategies of strengthening food and nutrition security program at Bandung Barat District, Indonesia

Dewi A. A. Lestari, Drajat Martianto, Ikeu Tanziha

Department of Community Nutrition, Faculty of Human Ecology, Bogor Agricultural University, Bogor, Indonesia. Corresponding author: D. A. A. Lestari, [lestariajengku@yahoo.com](mailto:lestariajengku@yahoo.com)

**Abstract.** The conditions of food and nutrition security that have not been achieved require a strategy of strengthening, especially at district level. This study aims to formulate alternative and priority strategies for strengthening food and nutrition security program at district level. The method used cross-sectional study, with in-depth interviews with stakeholders in Bandung Barat district. Analysis of Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) used to formulate the strategies. Formulation of alternative strategies used Strengths-Weakness-Opportunities-Threats (SWOT) method, while the strategic priorities used Analytical Hierarchy Process (AHP). The result of this research showed that the most important internal factor was the natural resources potential of Bandung Barat district and the most important external factor was the market opportunity for agriculture, livestock, and fishery sector. The total weighted IFE matrix score of 2.21 and EFE matrix is 2.84, it showed that internally the program does not optimize its strength and does not avoid weaknesses, externally optimizing opportunities and avoiding threats. The strategy priority chosen was the improvement of institutional performance and human resource capacity (0.324).

**Key Words:** AHP, EFE, IFE, SWOT, stakeholders.

**Introduction.** Food and nutrition security is a global challenge and a prerequisite for a healthy and peaceful society. Food security exists when "all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO 1996). Nutrition security "exists when secure access to an appropriately nutritious diet is coupled with a sanitary environment, adequate health services and care, in order to ensure a healthy and active life" (FAO, IFAD, & WFP 2015)

In line with the global conditions, in developing countries including Indonesia is increasingly difficult to achieve, maintain and improve the quality of food and nutrition security sustainability. Fulfillment of food necessity is a human right that must be achieved to obtain a good nutritional status and has a very important role in the nation's development that shows the existence of the sovereignty of the nation and will determine the success of a nation's development through the availability of qualified human resources (FAO 2011; Suryana 2014).

Food security as an indicator of national and regional development described in UU No. 18 of 2012 (DPR RI & Presiden RI 2012) on food, which defines food security as "the condition of the fulfillment of food for the state up to individuals, which is reflected in the availability of adequate food, both quantity and quality, safe, diverse, nutritious, equitable, and affordable and not contrary to the religion, beliefs, and culture of the community, to be able to live healthy, active, and productive in a sustainable way. The law on food is then spelled out in Government Regulation PP No. 17 of 2015 (Presiden RI 2015a) on food and nutrition security and implemented in Government Leadership decisions namely Provincial and District Regulation on food and nutrition security (DKP 2016).

Implementation of local laws and regulations on food and nutrition security needs to be evaluated to see the achievements of development in a district, as well as local governments also need information on the success or failure of policies in reducing food insecurity (Leroy et al 2015). In implementing the policy and the achievement of food and nutrition development targets, an active role and synergistic coordination for all units of regional apparatus related to the strengthening of food and nutrition under the coordination of the Council of Food Security is required.

Based on the results obtained from the Global Food Security Index (GFSI) on global food security parameters developed, Indonesia is ranked 71 in 2016 and has slightly increased in 2017 to rank 69 (EIU 2017). At the national level, based on priority distribution among provinces through food security and vulnerability atlas in 2015, West Java has the moderate vulnerability (priority 3-6) and Bandung Barat District is ranked 285 out of 398 districts which were analyzed. Analysis the situation of food and nutrition security in 2013 based on indicators of input, process, and outcome of food and nutrition indicates that West Java Province is resistant.

The condition of food availability in the district area does not always guarantee the fulfillment of food consumption of the community or household, the availability of adequate food at the macro level does not necessarily improve the quality of consumption and nutritional status of society (Suryana 2014). This is in line with research conducted by Lestari et al (2018) which states that although Bandung Barat District is one of the district in West Java province which has potential of some competitive commodities as well as competitive in the field of agricultural horticulture with agricultural land area in Bandung Barat District consists of wet (rice field and pond) area of 12,168 Ha, and land area of 118,409 (PEMDA KBB 2015), but this is not in line with nutritional problems that is prevalence of underweight, wasting and stunting in infants that still exist in the district and the condition food and nutrition security is still resistant. The condition of the food and nutrition security is still in the situation of food insecurity, therefore it is necessary a strategy that can strengthen food and nutrition security especially at the district level in West Java Province which still has not evaluated the achievement of food and nutrition security as a whole.

**Material and Method.** This research is semi quantitative-qualitative research, using cross-sectional study design. The research was conducted in Bandung Barat District, West Java Province in March-August 2017. The respondents were local officials related to the food and nutrition security with sampling technique using purposive sampling. Respondents who are involved in the research, are related agencies and incorporated in the Council of Food Security of Bandung Barat, such as head of 1) Economic and Development Section at Regional Secretariat, 2) Economic Section at BAPPEDA 3) Department of Food Security, 4) Department of Industry and Trade, 5) Department of Health, 6) Department Watering System, 7) Department of Agriculture, Plantation, and Forestry, 8) Department of Animal Husbandry and Fisheries, 9) Community Empowerment and Regional Development Board, 10) Regional Disaster Management Board, 11) Department of Transportation.

The data were collected by using the in-depth interview. The types of data collected in this study are primary data, in the form of questionnaires and interviews related to food availability, food affordability, and food utilization. Variables collected based on factors affecting the strengthening of food and nutrition security. Determination of internal and external factors that affect the food and nutrition security program is done by interviewing local officials qualitatively. The triangulation validation use validity data i.e. matching statement of the respondent's, secondary data, and observation. Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) are used to know the position of the food and nutrition security program in response to internal and external factors (Rangkuti 2015). The internal and external positions of the program are assessed with 3 stages. Determination of the rating based on Likert scale 1-4 is the first stage which indicates that response is very weak if the value is 1, the response is weak if the value is 2, the good response is if the value is 3 and the very good response is if the value is 4. To determine the weights done by doing paired comparisons is the second

stage on all factors that affect the implementation of the program, and then to determine the scores by multiplying the rating, and weight is the third stage. Internally the implementation of the food and nutrition security program has not utilized the strength and does not reduce the weakness if the internal score is  $<2.5$  and the implementation of the program has utilized the power well and reduce its weaknesses if the score is  $\geq 2.5$ . The external score  $<2.5$  concluded that externally the execution of the program has not taken advantage of opportunities and does not avoid threats. Score  $\geq 2.5$  externally, reveals that the implementation of the program has taken advantage of opportunities well and avoided any threats.

**Results and Discussion.** Based on the interview result we obtained some strategic factors that influence the strengthening of food and nutrition security program in Bandung Barat District. The strategic factors consist the strengths and weaknesses for internal factors (Table 1) and opportunities and threats for external factors (Table 2).

The strength factor that has the highest score was the natural resources potential of Bandung Barat District for strengthening food and nutrition (0.38). The weakness factor that has the highest score was the higher population growth rate. The total score generated from Internal Factor Evaluation (IFE) was 2.21 ( $<2.50$ ), indicating that food and nutritional deficiencies were weak internally, not yet maximally harnessing their strengths and not reducing the weaknesses in the internal program (Rangkuti 2015).

Table 1  
Internal factors evaluation

<i>Strength</i>	<i>Weight</i>	<i>Rating</i>	<i>Score</i>
A. Potential natural resources (agriculture, livestock, and fisheries)	0.096	4	0.385
B. The geographical condition of Bandung Barat District is in the satellite area	0.098	2	0.197
C. The structural institution of food security	0.095	3	0.284
D. The existence of food security coordination agency	0.086	1	0.086
E. The price of agricultural land, livestock, and fishery	0.087	1	0.087
<i>Weaknesses</i>			
A. The quality and quantity of human resources	0.094	2	0.188
B. The lack of empowerment of each work units and regional devices in accordance with basic tasks and functions for improving food and nutrition security	0.089	2	0.177
C. Budget allocation for improving food and nutrition	0.077	2	0.155
D. Poverty level	0.086	2	0.173
E. Access, infrastructure, and transportation	0.097	2	0.194
F. The rate of population growth	0.094	3	0.282
Total score	1	-	2.208

Opportunity factors with the highest scores were market opportunities for agriculture, livestock, and fisheries, in line with the research conducted by de Graaf et al (2016). The threat factor that has the highest score was the potential of natural disasters in Bandung Barat district, geologically was a potential earthquake area, especially tectonic type and volcanic earthquake and landslide. The total score generated from External Factor Evaluation (EFE) was 2.64. The total score was above the set average of 2.50. This indicates that externally, stakeholders of food and nutritional resistance respond well to opportunities and avoid external emerging threats (Rangkuti 2015).

Table 2

## External factors evaluation

<i>Opportunities</i>	<i>Weight</i>	<i>Rating</i>	<i>Score</i>
A. The existence of central food security program policies	0.091	4	0.362
B. Regional regulations on partnerships with the private sector and sustainable agriculture review	0.089	4	0.355
C. Market opportunities for agriculture, livestock and fishery sectors	0.098	4	0.392
D. The existence of nutritional and public health institutions	0.090	3	0.271
E. Education and training for personnel to improve the quality of human resources	0.093	2	0.185
F. The horizontally and vertically coordination between units of work regional devices	0.097	2	0.194
<i>Threats</i>			
A. The transitional function of agricultural land	0.087	1	0.087
B. The occurrence of distortion role of Non-Governmental Organizations	0.091	2	0.183
C. Potential natural disasters in Bandung Barat District	0.080	3	0.240
D. Nutrition and health issues	0.092	2	0.185
E. The lack of innovation and implementation program of each unit of regional devices	0.092	2	0.184
Total score	1	-	2.639

Some internal factors that influence the strengthening of food and nutrition security programs in Bandung Barat District consist of strength and weakness. One of the strength factors consist in the potential of natural resources for the development of plantation potential. Based on the recapitulation data, plantation commodities that provide the most production contribution are obtained from 15 sub-districts in Bandung Barat District. Most of the area is very fertile and land use is for agriculture, forestry and protected area so that cultivation and agriculture-based business is very suitable for various agricultural commodities.

The geographical situation in the satellite area located on the edge of a larger city is a supporting area for the surrounding big cities and is the bridge entrance/access to the city, serves as a major city support. The high price of land in Bandung Barat District also has an influence on agricultural land, livestock and fishery in order to survive in accordance with its function. In addition, the availability of structural institutions of food security and policy aspects are made by local governments to encourage increased food security and nutrition in the area and the inclusion of policies in the Medium Term Development Plan Area (RPJMD).

Implementation of policies in the form of programs and action plans has been incorporated into strategic plans (Renstra) and work plan (Renja) of each agency related to food and nutrition security. The policy document is part of the local government's commitment to support food and nutrition security. An other strength is the existence of food security coordination agency in accordance with the Decree of the Regent of Bandung Barat No. 188.45/Kep.591-KKP/2015 (Bupati KBB 2015) regarding the establishment of Food Security Council of Bandung Barat District.

Factors of weaknesses are the quality and quantity of Human Resources (HR). The number of health personnel consisting of public health, sanitation and nutrition workers in the area of Bandung Barat District is of 23, 22 and 34 individuals. The ratio for 100,000 inhabitants is 1.41, 1.35 and 2.08. It is still considered inadequate because it is in accordance with the target data of Sumber Daya Manusia Kesehatan (SDMK) on the population of 2014, 2019 and 2025 which are sourced from data of Kepmenko Kesra No.

54 of 2013 (Menkokesra RI 2013) on Health Workforce Development Plan (RPTK) in 2011-2025, the target ratio of public health, sanitarian, and nutritionist in the year 2019 amounted to 16, 18 and 14.

The empowerment of each Regional Work Unit (SKPD) is not optimal in accordance with basic tasks and functions for improving food and nutrition security. The coordination across sectors through meetings is carried out as needed and often not directly attended by the relevant official but represented to staff/executives who do not have the authority to make further decisions and are also often represented to different people so that sustainability coordination will be relatively limited.

The budget allocation for health increased from from 5% in 2010 to 10% in 2015, it has been allocated for nutrition which can increase food and nutrition security in Bandung Barat District. The percentage of people in poverty in Bandung Barat District decreased from 14.2% in 2011 to 12.2% in 2015. The percentage from 2011 to 2015 is 14.2%, 13.3%, 12.9%, 12.2%, 12.2%, the range of values between 10% -20% describes the existing poverty conditions in the area of Bandung Barat District is in the medium category (BPS 2015).

Access, infrastructure, and transportation that support food and nutrition security can be seen from the proportion of road network in good condition from 2011 to 2015 which are 31.9%, 37.3%, 30.1%, 44.8%, 49.9% respectively. Although the proportion of road network in good condition tends to increase from 31.9% to 49.9%, it is still below the Minimum Service Standard for Public Works and Spatial Planning in the Minister of Public Works Regulation 2014 (Sekretariat Jenderal Pusdatin 2015) which requires the proportion of road network length in good condition by 2019 is at 60%.

The rate of population growth is increasing. By 2015 the population in Bandung Barat District is 1,592,705 individuals; large population with high population growth rate (1.24%) resulted in increasing food demand. In addition, large populations also require greater space and energy, resulting in an imbalance of carrying capacity and available capacity. Carrying capacity is the availability of arable land which tends to decrease due to degradation, expansion of industry, housing, and other factors. Available capacity for growth population is not directly proportional to the growth of food production, whereas the population demands the availability of sufficient quantities of food, affordable prices, and available at all times.

Based on internal factors, the biggest strength factor is the natural resources potential for strengthening food and nutritional security with a score of 0.38. Natural resources are the economic backbone of a region that contributes to the welfare of the population; the abundance of natural resources possessed by a region capable of being a factor driving the economy has better economic performance (Heryawan et al 2014).

The greatest weakness is found in the increasing rate of population growth. This is because increasing food demand along with increasing population to gain access to food is one of the main components in the realization of food security (Rachman & Ariani 2008) and if the rate of population growth increases will require an increased level of consumption which leads to emphasis on the agriculture sector (Mardianto & Ariani 2004; Suswono 2014).

The total score generated from IFE is 2.21 (<2.5), indicating that food and nutrient deficiencies are weak internally, not yet maximally harnessing their strengths and not reducing the weaknesses in the internal program (Rangkuti 2015).

Several external factors that influence the strengthening of food security and nutrition programs in Bandung Barat District consist of opportunities and threats. Opportunities that can support the strengthening of food and nutrition programs are the policy of the program of food security center, in accordance with the 1945 Constitution, Law No. 18/2012 (DPR RI & Presiden RI 2012), PP RI No. 17 of 2015 (Presiden RI 2015a), West Java Provincial Regulation No. 4/2012 (DPRD Provinsi Jabar, Gubernur Jabar 2012).

On food, mandates that efforts to meet the needs of food consumption take precedence over domestic production. This effort suggests that establishing food security must be based on independence and food sovereignty supported by the subsystem of integrated availability, distribution, and consumption of food that has been described in

food security and nutrition. In line with the food law, the new government under the leadership of President Joko Widodo and Vice President Jusuf Kalla qualified food as one of the important agenda of the national development. It is contained in the RPJMN 2015-2019 (Presiden RI 2015b) that to realize economic independence by moving the strategic sectors of the domestic economy is through increasing food sovereignty.

Bandung Barat District as a new autonomous region has a variety of complex issues, especially in terms of improving the welfare and economy of the community. Handling cannot be solved only by Bandung Barat District Government but it takes cooperation from the various parts, so that are issued local regulation concerning partnership with private sector and sustainable agricultural land assessments to accelerate economic development an effective and strong region requires synergy between government, business, and society.

The program called "Working together Program" is an enhancement of cooperation between Bandung Barat District Government especially the synergy of Corporate Social Responsibility (CSR) program with work plan of Bandung Barat District Government in improving people's prosperity. It is expected that this program can improve the quality of public services and is able to create a stimulus in improving people's welfare. The development in Bandung Barat District involving businesses such as state-owned enterprises (BUMN), Regional Owned Enterprises (BUMD), banks and other businesses. The program is directed to be one of the development accelerator programs, related to humanity, education, health, economics and environment. The regulation of Bandung Barat District No. 800/kep.327/economy of 2012 (Bupati KBB 2012) on corporate social responsibility, implementation of the decision of this district is realized by establishing an independent institution consisting of BUMN, banks and some companies called Bandung Barat Corporate Responsibility (BBCSR) with the aim of improving program synergies between Corporate social Responsibility (CSR) Programs with District Government program so that CSR can be more targeted to the communities really needs.

Efforts to revitalize and protect the land by protecting and guaranteeing the availability of land are summarized in UU 41/2009 (DPR RI & Presiden RI 2009) on the Protection of Sustainable Agriculture Land and the Government Regulation of its supporters. Now it is published PP. 1/2011 (Presiden RI 2011a) on determination and conversion of sustainable agricultural land, PP No 12/2012 (Presiden RI 2011b) on Incentives of Sustainable Agricultural Land Protection, PP. 25/2012 (Presiden RI 2012a) on Sustainable Land Farming Information System and PP. 30/2012 (Presiden RI 2012b) on Financing of Sustainable Farming of Food Agriculture and Regulation of the Minister of Agriculture No. 07/Permentan/OT.140/2/2012 (Mentan RI 2012) on Technical Guidelines on Criteria and Requirements for Sustainable Land, Sustainable Land and Reserves Land and Land. Furthermore, the Ministry of Agriculture participates actively in the implementation of Spatial Plans and in National, Provincial and District/City level to improve food production activities through the utilization of food agriculture land sustainable that must be done according to the criteria and determination requirements.

The protection of sustainable agricultural land is intended to carry out the guidance, supervision, and control of the conversion of agricultural land to ensure the sustainable availability of agricultural land, through the provision of incentives to farmers and the application of incentives, this has been stated in the West Java Provincial Regulation number 27 of 2010 (Gubernur Jabar 2010) on the protection of sustainable agricultural land.

Market opportunities for the agriculture, livestock and fishery sectors, along with the increasing population and people's need for food, the increased market demand for agricultural, livestock and fishery products will increase, but must be balanced with the ability of local and processed food industries to see market demand by improving the culinary creativity through the available various local foods.

The presence of nutrition and public health institutions structurally accommodated in a section of nutrition in the field of Public Health and Family in the agency of Bandung Barat District Health Office. The regional institutions are the drivers and mobilizers in achieving the objectives of food and nutrition security programs to further improve coordination in the formulation of policies, evaluation, and control of nutrition and public

health programs that can support the strengthening of food and nutrition security programs.

Human Resources are an apparatus of local government which works as a mover of an organization of the Bandung Barat District Government and serves as an asset that must be trained and developed its abilities. Human resources in the form of human being are employed in an organization as a driver, thinker, and planner to achieve organizational goals.

Horizontally and vertically coordination is required between The Regional Device Work Unit (SKPD). Horizontal coordination is incorporated in the technical team members of the Food Security Council established and has been listed in the Decree of the District of Bandung Barat No. 188.45/Kep.591-KKP/2015 (Bupati KBB 2015) as well as the vertical coordination of food security councils to Bandung Barat District Government, West Java Provincial Government, and Central Government.

The main threat that can be a barrier in the achievement of food and nutrition security at district level is the transition of agricultural land functions. The area that has good agricultural potential, it is feared will experience a decrease in the agricultural land area due to the increasingly reduced public interest for agriculture and land sales to private parties for house construction whose demand, which is increasing every year.

The shrinking area of agricultural land is a result of the conversion of productive agricultural land to massive non-agricultural uses, as well as the competition for the use of agricultural land for non-food use. Utilization of food producing agricultural land for non-food agriculture such as the conversion of agricultural land into housing is a form of competition of land use that can threaten food security.

The shifting function of agricultural land in Bandung Barat District area can be seen from the percentage of agricultural irrigation land which tends to decrease from 66% to 53% can be one of the causes affecting the decrease of food supply chain either directly or indirectly and low technology innovation and production facilities, low financial incentives to implement technology optimally, and limited accessibility to capital resources. Other factors that influence are floods, natural disasters, drought and weather conditions or climate that is less supportive in the agricultural sector (Dwinugraha 2016).

Non-governmental organizations (NGOs), whose concept is non-participant, do not seek economic, voluntary and juggle-driven moral movements are not tied to economic and political motives, which can provoke distortion of the role of NGOs. The distortions that occur can be caused by the weak control of state institutions in carrying out supervisory functions amid the government's domination of the society, advocacy against state violence and policies that harm the people. The role of the NGOs is to work with local governments to catalyze system changes, to monitor the implementation of the system and the implementation of the state, to facilitate the reconciliation of citizens with the judiciary and the implementation of service programs. It should be avoided the existence of profit-seeking motives, lack of funding sources and unprofessionalism, unclear ideology and too loose regulation (Suharko 2005).

The areas that are prone to disasters are areas that have experienced a disaster or an area that has the potential for disaster. The most frequent disaster is flooding and what has happened is soil erosion. In addition, there are also some areas that are included in the danger of volcanic lava. The occurrence of natural disasters that often occur is earthquakes, landslides, strong winds, and volcanic eruptions. The occurrence of natural disasters is dominated by the occurrence of earthquakes and landslides.

The availability and affordability of food do not always guarantee the nutritional quality, there are still nutritional and health issues. The core components of food security include the use of nutrition that reflects the quality of food for an active and healthy lifestyle and refers to household food use and the individual's ability to absorb and metabolize nutrients (Barrett 2010; Soon & Tee 2014).

Lack of nutritional intake in pregnant women (chronic energy deficiency - CED) will result in stunting, wasting, and underweight status as reflected in anthropometry as proxies in food use influenced by food intake, access to clean water and sanitation (Jones et al 2013; Kavosi et al 2014), treatment practices (exclusive breastfeeding in infants aged 0-6 months) and there is a significant relationship between basic sanitation

behavior and the incidence of diarrhea (Taosu & Azizah 2013), the determinants of stunting events is the poor environmental sanitation which negatively affect the health and nutritional status of children (Cahyono et al 2016; Fink et al 2011; Monteiro et al 2010; Spears et al 2013).

The innovation and implementation program is not optimal. Programs implemented by each SKPD largely refer to the activities or programs in the previous year. The results of the evaluation monitoring should be used as a material for planning the implementation of the program in the previous year, which is expected to be more effective and efficient.

Based on external factors, the biggest opportunities affecting food security and nutrition programs are market opportunities for agriculture, animal husbandry and fisheries with a score of 0.392. Based on the recapitulation data, the commodities that contribute in Bandung Barat District are plantation, dairy cattle and beef cattle which is one of the leading livestock sector. Environment and natural conditions supported by the availability of feed and temperature appropriate for optimal growth for livestock growth, and Bandung Barat District has two large reservoirs that are used as a place for fish farming in Floating Net Pond (KJA).

The greatest threats most affect food security and nutrition programs with a score of 0.240. Geologically the area has potentially occurred earthquake, especially type tectonic and volcanic earthquakes and landslides. In addition to landslides, also often occurs land subsidence, cracks, and fractures (PEMDA KBB 2013). The impact of the earthquake disaster on the sustainability of the cattle plant integration effort resulted in a 20-30% decrease in production and an estimated 3 months after the quake of livestock production returned to normal. The total score generated from EFE was 2.64 (>2.5). This indicates that externally, stakeholder food and nutritional security responds well to opportunities and avoids external threats that arise (Hidayat et al 2009).

Alternative strategies are generated through matching stages on internal and external factors (Table 3). Based on the matching results of the SWOT matrix, increased food and nutrition security obtained several alternative strategies. Alternative strategies obtained based on matching results on the SWOT matrix are improving institutional performance and human resource capacity (SO strategy), implementing revitalization of agriculture, livestock and fisheries (ST strategy), improving coordination, advocacy and socialization of food and nutrition security (WO Strategy) and improvement commitment, roles and partnerships among stakeholders (WT Strategy) (Table 3).

Table 3

Strength, Weakness, Opportunity, Threats (SWOT)

	<i>Strength (S)</i>	<i>Weakness (W)</i>
Opportunity (O)	Increasing performance of food and nutrition security institutions and human resource capacity building	Improving coordination, advocacy, and socialization of food and nutrition security
Threats (T)	Revitalization of agriculture, livestock, and fisheries	Increasing commitment, role, and partnership among stakeholders

The alternative S-O strategy that was chosen by matching result was the improvement of institutional performance and human resource capacity. This strategy used the main strengths of local government, namely the existence of local food and nutrition security institutions, the existence of policy aspects, the implementation of policies in the form of action programs and the availability of budget for food and nutrition security. All available strength factors are used to take advantage of existing opportunities, namely partnerships with the private sector and sustainable agriculture review.

The alternative S-T strategy chosen based on matching result is the revitalization of agriculture, livestock, and fishery. This strategy used the power to avoid or reduce the impact of threats. The strengths are the existence of local government policy to support food and nutrition security, the implementation of policy in the form of program and



action plan in program. The existing strengths are increasingly optimized to reduce the impact of threats in the form of shifting functions of agricultural land, the potential for natural disasters and the presence of nutritional and health problems.

The alternative W-O strategy chosen based on matching results is to improve coordination, advocacy, and socialization of food and nutrition security. This strategy is aimed at reducing weaknesses and taking advantage of external opportunities. Existing weaknesses include budgetary constraints to food and nutrition, poverty, access, infrastructure and transport that are not yet supported, increasing population growth rates. Weaknesses can be reduced by exploiting the existing external opportunities of market opportunities for agriculture, livestock, and fishery and horizontally and vertically coordination among regional work units.

Alternative W-T strategies selected based on matching results are increased commitment, role, and partnership among stakeholders. This strategy reduces weaknesses to avoid threats. Weaknesses to be reduced are the quality and quantity of human resources that have not been adequate, not optimal empowerment of each regional work units in the implementation of basic task and function. The threat factors that must be anticipated are the shifting of agricultural land functions, the existence distortion role of the non-governmental organization, and not yet optimal program innovation from each regional work units.

Priority strategy for strengthening food and nutrition security program used AHP analysis. Based on the results of data processing using expert choice software v.11, obtained a hierarchy of priority system of interest based on determinants, supporting criteria and strategies for achieving food security and nutrition. Results of hierarchical analysis of the process sourced from the assessment of experts in the research area with attention to several policy alternatives in Bandung Barat District is presented in the Figure 1.

AHP analysis which approaches individual opinion analyze by conducting it. The result of combined opinion analysis has value Inconsistency Ratio (IC) = 0.01. This value is a composite value of eleven respondents consisting of multi-disciplinary experts who have relevance to this research. Each expert respondent has a consistency degree of IC <0.01. The deviation is very small because the respondents include consistency in giving weighted value. High consistency can be achieved by keeping the respondent's answer based on the initial decision accompanied by the facilitator to maintain the consistency of expert answers when there are inconsistencies. Some aspects which affects the consistency of respondents' answers are knowledge, experience, interview time, environmental situation and respondent intuition (Saaty 1993).

The result shows that priority strategy in Bandung Barat District needs to improve institutional performance and human resource capacity with the total weight of 0.324 (Figure 1). The priority of this strategy can be run by maximizing the institutional role of food and nutrition security. According to Slade & Carter (2016), the improvement of human resource performance and capacity is able to increase the strengthening of food and nutrition security by playing an active role in responding effectively to strengthening food and nutrition security, arranging recruitment system of local government, evaluation of positions, preparation of competency standards, individual competency-based assessments, employee database development, and improvement of education and training curriculum (Ginting & Daeli 2012; von Braun & Birner (2017).

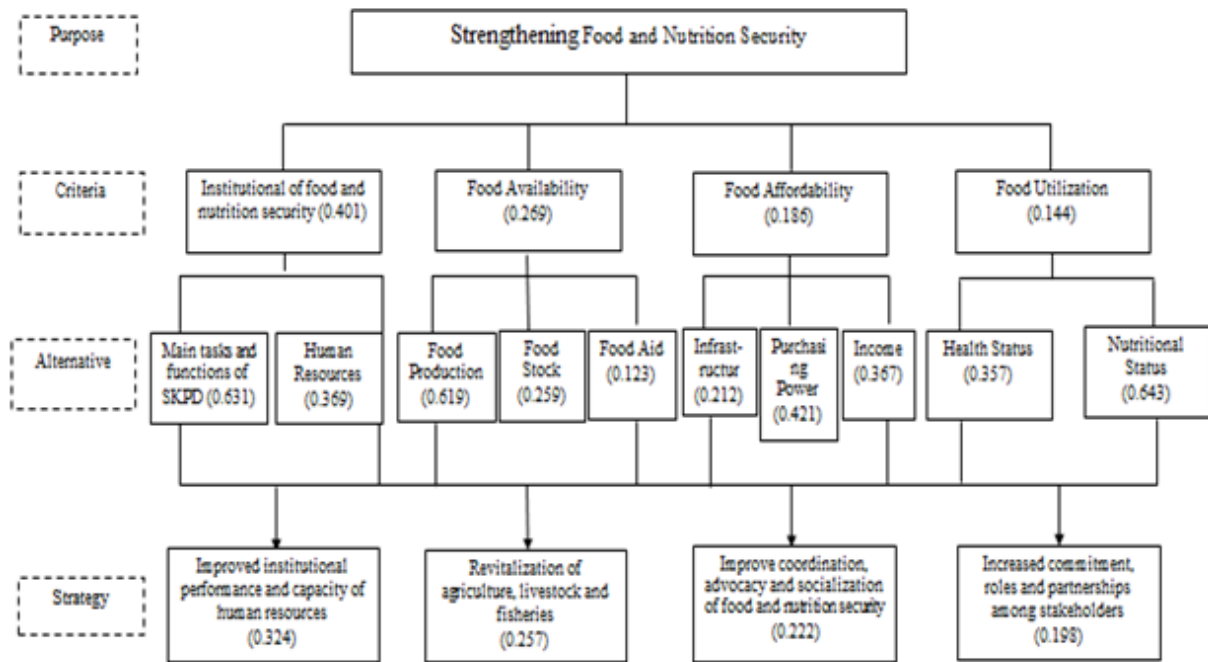


Figure 1. Weight of priority strategies for strengthening food and nutrition security.

**Conclusions.** The most important internal factor in strengthening food and nutrition security program in Bandung Barat District is the natural resources potential of Bandung Barat District (0.385) and the most important external factor are market opportunities for agricultural, livestock and fishery sectors related to the environment and natural conditions supported by appropriate feeding and temperature availability. Based on the SWOT analysis, alternative strategies that can be applied to strengthen food and nutrition security programs are through revitalization of agriculture, livestock and fishery, increasing commitment, role and partnership among stakeholders, improving the performance of food and nutrition institution and increasing human resource capacity, coordination, advocacy and socialization of food and nutrition security. The main priority of strategy that needs to be taken is the improvement of institutional performance and capacity of human resources with score 0.324.

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Authors:

Dewi Aprilia Ajeng Lestari, Bogor Agricultural University, Faculty of Human Ecology, Department of Community Nutrition, Indonesia, Bogor, 16680, e-mail: lestariajengku@yahoo.com

Drajat Martianto, Bogor Agricultural University, Faculty of Human Ecology, Department of Community Nutrition, Indonesia, Bogor, 16680, e-mail: drajat\_martianto@yahoo.com

Ikeu Tanziha, Bogor Agricultural University, Faculty of Human Ecology, Department of Community Nutrition, Indonesia, Bogor, 16680, e-mail: ikeu\_jamilah@yahoo.com

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