

THE ALARMING FOOD INSECURITY SITUATION IN INDONESIA: ANALYSIS OF 13 STUDIES IN 6 PROVINCES WITHIN 2004-2006 AND ITS RELATIONSHIP WITH LIVELIHOOD SECURITY

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ABSTRAK

KETAHANAN PANGAN YANG MENGKHAWATIRKAN DI INDONESIA: ANALISA 13 PENELITIAN DI 6 PROVINSI TAHUN 2004-2006 DAN HUBUNGANNYA DENGAN KETAHANAN HIDUP

Pada kurun waktu 2004-2006, SEAMEO-TROPED RCCN-UI telah melakukan 13 survei yang berhubungan dengan Ketahanan Pangan. Survei-survei tersebut mencakup 6 propinsi (Jakarta, Banten, Jawa Timur, Nusa Tenggara Barat (NTB), Nusa Tenggara Timur (NTT) dan Sulawesi Tengah), mencakup 22 Kabupaten dan 9.038 rumah tangga. Sepuluh survei dilakukan di perdesaan. Tulisan ini bertujuan untuk melihat pola ketahanan pangan (*Food Security*), dari segi lokasi, waktu, kualitas, maupun hubungannya dengan status gizi dan ketahanan hidup (*livelihood security*). Berdasarkan analisa menurut lokasi, NTT memiliki proporsi rumahtangga rawan pangan lebih banyak (94%) dibandingkan propinsi lainnya (68-83%) baik dari segi rawan pangan dengan kelaparan, kelaparan tingkat sedang, maupun kelaparan tingkat parah. Kebanyakan rumah tangga rawan pangan di NTB termasuk kategori Kelaparan (rawan pangan 77%, rawan pangan dengan kelaparan 64%), namun kebanyakan rumahtangga rawan pangan di Jakarta termasuk tidak kelaparan (rawan pangan 83%, rawan pangan dengan kelaparan 19%). Di Jawa Timur, walaupun persentase rumahtangga rawan pangan sama, proporsi terbesarnya di kota (kota 25%, desa 19%). Sebaliknya, di NTT proporsi rumahtangga yang rawan pangan dengan kelaparan lebih besar di desa (kota 58%, desa 65%). Berdasarkan analisa waktu, ketahanan pangan rumah tangga di NTT dari 2004-2006 tetap tinggi (>93%) dan cenderung meningkat. Banyak rumah tangga turun dari kategori kelaparan tingkat sedang menjadi kelaparan tingkat parah setelah September 2005 (50%). Ketahanan rumah tangga di Sulawesi Tengah juga mengkhawatirkan, i.e. meningkatnya rumah tangga kurang pangan sebanyak 19% dalam kurun waktu satu tahun. Berdasarkan analisa dimensi, masalah ketahanan pangan terbesar adalah aksesibilitas, bukan ketersediaan. Berdasarkan analisa kualitas, walaupun lebih banyak varietas makanan (*dietary diversity*) terdapat di Jakarta/Surabaya dibanding NTT (99 dibanding 56), penduduk NTT secara rata-rata mengkonsumsi lebih banyak varietas makanan (Jakarta dan Surabaya 40, NTT 46). Beragam cara untuk bertahan hidup (*coping strategies*) ditemukan di daerah-daerah survei. Asosiasi antara ketahanan pangan dengan status gizi ditemukan di NTT (dengan *stunting*) dan NTB (dengan *underweight*); $p < 0.05$. Variabel langsung (ketahanan ekonomi, ketahanan gizi) maupun variabel tidak langsung (ketahanan pendidikan, lingkungan perumahan, pangan, dan kesehatan) mempunyai peran pada ketahanan hidup rumahtangga di NTT maupun di Sulawesi Tengah.

Kata kunci: ketahanan pangan, rawan pangan, kelaparan, status gizi, keragaan pangan, ketahanan hidup

INTRODUCTION

Food security refers to physical and economic access by all people, at all times to sufficient, safe, and nutritious food in order to meet their dietary needs and food preferences for an active and healthy life (1). Four aspects or dimensions of food security are: availability, accessibility, utilization, and sustainability. Availability refers to adequate food at one's disposal. Accessibility of food within the household denotes that all individuals have sufficient resources to obtain appropriate food. Utilization of food covers aspects related to the ability of human body to ingest and metabolize food as well as food's social role of keeping family and community together. Sustainability refers to availability of food within a longer time period. Cases of absolute food scarcity within a region happen less frequently today because of the more global access to food. Instead, problems of food entitlement or command over food are now more dominant. Assessment of food insecure households in Indonesia is currently approximated through measurement of poor households, such as those used by the National Statistic Bureau (BPS) and the National Family Planning Bureau (BKKBN).

Livelihood security, on the other hand, is a broader concept, involving sustainable, adequate access to resources to meet basic needs. It comprises of the following determinants: education security, community participation, habitat security, food security, and health security (2).

The paper analyzed thirteen studies conducted by Seameo-Tropmed RCCN-UI in the period 2004 to 2006 (3-15). The objective is to analyze trend, if any, within the various study places and time of data collection generated by the studies. Although the main objective of each of the thirteen studies may be different, similar food and/or livelihood security aspects can be pulled out.

METHODOLOGY

The studies covered 6 provinces, 22 districts with a total of 9,016 households (Table 1). Six studies were conducted in East Nusa Tenggara (n=3,554), two in West Nusa Tenggara (n=1,059), three in Central Sulawesi (n=1,560), two in East Java (n=886), one in Banten province (n=944), and one in Jakarta (n=1,013). The districts covered are as follows: Timor Tengah Utara (TTU), Belu, N. Jakarta, E. Jakarta, Surabaya, Timor Tengah Selatan (TTS), Sampang, Bangkalan, Kota Tangerang, Kabupaten Tangerang, Poso, Morowali, Tojo Una-Una, W. Lombok, C. Lombok, E. Lombok, Sumbawa, Bima, E. Sumba, Kota Kupang, Ende, and Flores Timur. Seven studies were part of a baseline survey, while 4 others were endline surveys. Ten studies were conducted in rural areas, while three others were either urban-rural or urban areas only.

In evaluating the food security status of the households, all studies used the United State's Food Security/Hunger Survey Module (FSSM) consisted of 16 questions (16). Household's responses were scored: "1" for affirmative response and "0" for negative response. The total score (range 0-18) were then categorized into four food security status, namely Food secure (0-2), Food insecure without hunger (3-7), Food insecure with moderate hunger (8-12), and Food insecure with severe hunger (13-18). Only one study in E. Java used the short form of the US-FSSM (6-questionnaires). Information from qualitative assessment, i.e. Focus Group Discussion (FGD) and in-depth interview were combined with the results of quantitative assessment to reveal a comprehensive review of the food security situation. Analysis of the food security situation was also based on its dimensions, namely availability, accessibility, utilization, and sustainability. Information on food intake quality was assessed using dietary diversity questionnaire (17). The questionnaire consisted of a list of food items based on various food groupings. The total number of food items consumed would reflect the variety of consumption within household or per individual. It is assumed, the more variety

the food, the more quality the consumption. Children <-2 SD Z-scores was categorized undernourished using anthropometric measurement (18, 19). Statistical calculation was analyzed using Statistical Program for Social Sciences version 11.5 (SPSS Inc., Chicago, USA).

Topic of livelihood security was discussed in two studies, in C. Sulawesi and E. Nusa Tenggara. Livelihood security is analyzed based on its two direct causes, namely economic security and nutritional security. The underlying determinants are five factors, namely education security, community participation, habitat security, food security, and health security. Factors affecting habitat security are shelter and environment, while factors affecting health security included mother and child care and water and sanitation.

RESULTS

In this section, food security results is presented based on location (pool provincial data, urban and rural setting), time (trend between 2004 and 2006), dimensions (availability, accessibility, sustainability, and utilization), quality, and its association with nutritional status. Livelihood security aspects will be discussed at the end.

Food security based on location

E. Nusa Tenggara has the highest proportion of food insecure households (94%), as well as those with hunger, moderate and severe hunger (Figure 1). Percentage of food insecure household in the other four provinces (W. Nusa Tenggara, C. Sulawesi, and E. Java, and Jakarta) ranged from 68% - 83%. The proportion of households suffering food insecurity with hunger is greater in East and W. Nusa Tenggara (65% and 64% respectively) compared with the other provinces, C. Sulawesi, E. Java and Jakarta, whose range from 19% to 29%. Although the total number of food insecure households in W. Nusa Tenggara is lower than E. Nusa Tenggara, proportion of having the insecurity with hunger is the same. Thus, most of the food insecure households in W. Nusa Tenggara

are categorized as with hunger (food insecure 77%, with hunger 64%). The opposite with W. Nusa Tenggara, the food insecure households in Jakarta are mostly without hunger (food insecure 83%, with hunger 19%). The proportion of households with severe hunger in E. Nusa Tenggara is one-fifth (20%) of the total households, while in the other three provinces, the proportion is less than 10%. Households in C. Sulawesi and E. Java are better off in terms of its food security status. However, improvement in food accessibility is still needed, since more than two-third is still categorized food insecure (C. Sulawesi 75%, E. Java 68%).

Comparing the three cities (Jakarta, Surabaya, Kupang)-Figure 2, Jakarta has the highest proportion of households that are food insecure and moderately insecure (food insecure: Jakarta 83%, Surabaya 68%, Kupang 62%; moderate insecure: Jakarta 30%, Surabaya 21%, Kupang 13%). Although Jakarta is the worse, proportion of households with hunger is much greater (approximately double) in Kupang (Jakarta 19%, Surabaya 25%, and Kupang 58%). Proportion of households with severe hunger is relatively similar (Jakarta 7%, Surabaya 4%, and Kupang 7%).

Comparing the rural areas (Figure 3), E. Nusa Tenggara has the worse number of food insecure, with hunger, moderate, and severe insecurity (E. Nusa Tenggara 94%, others 68-77%), followed by W. Nusa Tenggara, C. Sulawesi, and E. Java. The severe cases in E. Nusa Tenggara are about one-fifth, while in other places only less than 10%. The trend result in the rural area is similar to that of the pool data.

Urban-rural differences can be seen from the studies conducted in E. Java and E. Nusa Tenggara (E. Java urban=486, rural=400; E. Nusa Tenggara urban=117, rural=3,437). In E. Java, the proportion of food insecure households are comparable (both 68%), while in E. Nusa Tenggara, the rural areas suffered more (urban 62%, rural 94%) - note: the sample size for Kota Kupang is considered low $n=117$. In E. Java, although the percentage of food insecure households is the same, higher proportion of

having it with hunger is greater in urban area (urban 25%, rural 19%). In E. Nusa Tenggara on the other hand, the proportion of those having food insecurity with hunger is slightly greater in rural area (urban 58%, rural 65%).

Condition between local (non-uprooted) and ex-refugee (uprooted) households was compared in four studies (two in E. Nusa Tenggara and two in C. Sulawesi). One study in each location found statistical significant difference in the condition of the two different households, whereby the condition of the ex-refugee was worse (E. Nusa Tenggara $p\text{-value}=p<0.001$; C. Sulawesi $p\text{-value}=p<0.05$).

The SEAMEO study results are basically correspond to the results of national food insecurity and poverty mapping produced by the Ministry of Agriculture and WFP, in which East and West Nusa Tenggara are among the prioritized areas for intervention (Table 2).

Food security across time

From five studies in three districts of E. Nusa Tenggara (Timor Tengah Utara-TTU, Timor Tengah Selatan-TTS, and Belu) between September 2004 and February 2006 (Figure 4), the followings were observed: (a) the trend of food insecurity among the households is relatively the same (remains very high >93%), (b) The trend of food insecurity with hunger as well as food insecurity with severe hunger increased, (c) Households with hunger increased from 66% in September 2004 to 90% in February 2006, (d) More households fell from moderately hunger into severe hunger after September 2005 (increase from 12% to 62% or 50% increase).

The food insecurity situation in C. Sulawesi is alarming (Figure 5). All the indicators of food insecurity (i.e. proportion of food insecure households, proportion with hunger, moderately hunger, and severely hunger) increased in trend from the period February 2005 to February 2006. Number of households suffered from food insecurity increased by 19% within one year period. The trend of food insecure as well as the

food insecure with hunger in E. Java, on the other hand, is relatively stable between October 2004 and August 2005 (Figure 6).

Food security based on dimensions

Food availability is less problematic in all areas/provinces. Mothers admitted that food is sufficient in terms of its variety in the market. Food prices were also considered affordable. Common food sources varied: E. Java, mostly (85%) from the market, E. Nusa Tenggara mainly from own garden and field, and C. Sulawesi mostly (58%) from small kiosk around the neighborhood area. The following specific conditions were true in E. Nusa Tenggara: the availability of animal protein and vegetables throughout the whole year, the availability of plant protein during planting season only (Sept-Feb), and the less availability of water in August through November.

Overall, the problems lied in accessibility to food. Mothers mostly had no problem in providing vegetables and fruits, because they relied heavily on garden or field. However, provision of animal and plant protein was more problematic. The ownership of productive asset, land, and poultry was highest in E. Nusa Tenggara compared to E. Java and C. Sulawesi (productive asset >85%, land >62%, poultry 73%). Recipient of food aid was highest in C. Sulawesi (81%). The situation is more prevalent in refugees/ex-refugees/uprooted households (true in all three provinces).

Although farm land and water were available and accessible throughout the whole year, presence of food difficulties was still found. Thus, sustainability of food was a threat. In E. Java and E. Nusa Tenggara more than 81% felt the difficulties. Paddy stock lasted only for 3-4 months after harvest. Staple food shortages were felt in all three provinces (E. Java, E. Nusa Tenggara, and C. Sulawesi). Unsustainable animal and plant protein were experienced in E. Java and E. Nusa Tenggara, and vegetables in E. Nusa Tenggara. Drought and less working opportunity were recognized as problems in E. Java and E. Nusa Tenggara (e.g. disease, insect, infertile

land in E. Nusa Tenggara). Economic problem, psychological worryness were mentioned by people in E. Java and E. Nusa Tenggara. The predictors of food insecurity in E. Nusa Tenggara were income, socio-economic condition, and supply of food, while in C. Sulawesi, they were parent's education and income security.

Food security based on food quality (Dietary diversity)

Data on dietary diversity from five studies, two in urban and three in rural provinces i.e. Jakarta, Surabaya, E. Nusa Tenggara, C. Sulawesi, and Banten were available for analysis, which included two quantitative and two qualitative information. Two studies (i.e. Jakarta, Surabaya, and E. Nusa Tenggara) classified the dietary diversity questionnaire into six food groupings, namely carbohydrate, animal protein, plant protein, vegetables, fruits, and others. Although, more food items is identified from the Jakarta and Surabaya compared with the E. Nusa Tenggara study (99 and 56 respectively), the E. Nusa Tenggara consumed, on average, more variety of food (Jakarta 40 (min 7, max 64), Surabaya 40 (min 13, max 57), and E. Nusa Tenggara 46 (min 4, max 65)). In E. Nusa Tenggara, no statistical difference was found between ex-refugee and local community households in terms of their food variety.

Carbohydrate source food, vegetables and fruits are commonly consumed in E. Nusa Tenggara. However, households that could not provide animal or plant protein were also presence. The adults tended to eat more maize, while the children were given more rice. Meat was rarely consumed. Those who consumed fish every day was only 8-24%.

Coping strategies for food insecurity

Information on coping strategies was available for six studies in three provinces, namely E. Java, E. Nusa T and C. Sulawesi. Common coping strategies included actions belonging to four of the five coping categories, namely Income generation (i.e. seek additional work), Diet alteration (i.e.

cook whatever food available, purchase cheaper or low quality food, consume lower-valued food, consumed seeds, decrease food expenditure, find wild food, skip meals, reduce portion size, self-process the food), Immediate access to food (i.e. borrow food from the neighbor or family, receive food aid), Immediate access to cash (i.e. borrow money from the neighbor or family, sell assets including small and large assets, sell farm animals including small and medium size animals, agriculture/forest production, sell jewelry, and draw money from savings). Drastic steps (i.e. in-country migration, child labor, and working overseas) as the last measure of coping strategies, was found very rare in E. Nusa Tenggara. The lack of coping action in one province does not mean that the particular coping action is not present in that province. Since the objective of the studies varied, coping aspects may not be well explored, as the case of working overseas in W. Nusa Tenggara.

Association of food security and nutritional status

Six studies presented association between food security and/or its related factors with nutritional status of mothers and/or children. From the three provinces (E. Nusa Tenggara, W. Nusa Tenggara, C. Sulawesi, two showed statistical significant association, i.e. E. Nusa Tenggara (n=928) and W. Nusa Tenggara (n=819). The association in E. Nusa Tenggara (p-value <0.05) was with stunting while in W. Nusa Tenggara (p-value <0.05) with underweight. In E. Nusa Tenggara, households with hunger have shorter children (lower HAZ) but not lighter (no difference in WAZ and WHZ), showing the chronic food insecurity situation of the area.

Livelihood security

Two studies, namely in E. Nusa Tenggara and C. Sulawesi, focused on livelihood security. The studies compared two types of households, namely the uprooted (ex-refugee/refugee) and the non-uprooted (local). The potential factors affecting livelihood security was derived from

variables that were found to be statistically significant different between the two types of household. Both the direct causes (economic & nutrition security) as well as four of the five underlying determinants (educational, habitat, food, and health security) presumably had effect on livelihood security (Figure 7). The other underlying determinant, community participation, seemed did not have effect on livelihood security in E. Nusa Tenggara. In C. Sulawesi this aspect was not analyzed.

Household type (nuclear/extended), type of income (routine/non-routine), ownership of home appliances (i.e. television, VCD/DVD player, bicycle, cooking stove), and ownership of non-productive asset that is related to saving and capital, are noted as variables for economic security. For nutrition security aspect, weight-for-height (WHZ) index is important in E. Nusa Tenggara, while weight-for-age (WAZ) and height-for-age (HAZ) is important in C. Sulawesi.

Education of parents (both mother and father), food intake of mothers (i.e. energy, protein, zinc) and children (i.e. protein), the practice of taking sick children to professional health workers (i.e. midwife, Puskesmas), and acute respiratory infection in children were indicators specifically important for C. Sulawesi. Transportation to the school and to the market (i.e. type of vehicle used, distance, cost), malaria, immunization i.e. DPT and polio, care-giving practices, water supply facilities, and ownership of the house were particularly important for E. Nusa Tenggara. Common indicators for both studies were: latrine facilities (ownership and availability) and housing condition (i.e. type of roof and lighting).

DISCUSSIONS

The following should be considered in our challenge to overcome food insecurity. We have to target the underlying cause of undernutrition, which is poverty, as in the case of chronic food insecurity in E. Nusa Tenggara. Both short and medium term remedies should be worked out, especially in

places where food insecurity is increasing, as the case in C. Sulawesi. The prevention of transitory (seasonal) food insecurity is very important: i.e. (a) Agriculture prediction (land, weather, climate) can be optimized by using modern technologies; (b) Focus should be made not only on food availability, but also on water availability; (c) The usage of the short (6 questionnaire) USFSSM questionnaire to quickly assess households food security situation can be field tried. The role of education (training, extension) is vital, e.g. the difference between sufficient vs. nutritious food. The importance of food quality should not be ignored (aside from focusing on the increase of food quantity). National institutions should share their findings on methods and results that could help quick identification of food insecure households and individuals, as well as remedies. Last but not least, we should move on toward satisfying our livelihood security.

The following serves as limitation of the paper: (a) Some studies indirectly assessed food security status of the unfortunate/poor households due to interventions purposes, thus results may be over-estimated and not represent the general population; (b) The USFSSM questionnaire was adapted to local languages and situation in some studies, thus it was not direct translation of the original version. The original questionnaire was developed to evaluate food security status of people who mainly purchase their food. In Indonesian setting, the questionnaire must accommodate village subsistence farmers, e.g. alteration of the word "purchasing" to "supplying" food. The result of studies using USFSSM questionnaire was tested against coping strategies sought by Indonesian urban and rural households in six provinces (n=3,704) and the result was synergetic (20).

CONCLUSIONS

Considerable food insecurity condition was found in all study areas. East and West Nusa Tenggara suffered from chronic and higher degree of food insecurity. The increasing tendency of household suffering from food insecurity is alarming, whereby

accessibility to food is the most restricted variable. Food insecurity can, but not ultimately, lead to undernourishment, but definitely one of the determinants of livelihood security.

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