

# Philippine Food and Nutrition Security Atlas

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and Development

## Philippine Food and Nutrition Security Atlas

This document is prepared by Carleneth Fernandez-San Valentin and Juanito G. Berja, Jr., with overall guidance from Dipayan Bhattacharyya, World Food Programme, Philippines

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## FOREWORD

The World Food Programme (WFP)-Philippines has witnessed the strong commitment of the Government of the Philippines in halving extreme poverty from 33.1 percent to 16.6 percent by 2015. While there have been a few setbacks, there are strong indications that this goal could still be achieved through the various convergence initiatives undertaken by the National Government Agencies and stakeholders.

WFP is closely working with the Government of the Philippines through the Department of Social Welfare and Development (DSWD) to help strengthen government programmes and projects that target the most vulnerable population. As our contribution in building the Philippines Food and Nutrition Surveillance System, the Philippine Food and Nutrition Security Atlas (PFNSA) was drafted using the secondary data that are made available and accessible by National Government Agencies.

The PFNSA was built around the indicators that are used by the Government of the Philippines. It provides a political and physical map of initial analysis of trends and the most recent available data of selected determinants of food security. WFP deems to contribute in building the geographical database of selected food security indicators. We hope that the PFNSA would help policy makers, national government agencies, local government units and various stakeholders in developing appropriate interventions for the most vulnerable groups.

We are thankful for the invaluable support of the Federal German Government through World Food Programme (WFP) Head Quarters and the National Government Agencies in the completion of the PFNSA.

**STEPHEN L. ANDERSON**  
*Representative and Country Director  
World Food Programme, Philippines*

## Chapter 1 - Introduction

### 1.1 Background

The Philippines has an estimated 95.8 million population spread across the 17 regions. The archipelagic nature of the country makes it susceptible to various natural disasters. However, there is now a strong recognition and awareness that climate change and the destruction of natural resources bring to the fore an even grave problem that needs immediate and integrated action from the Government and multilateral agencies.

Economic growth in the country in 2011 was slow and erratic. The most recent estimates of poverty would show that little, if any, improvements in certain regions of the country happened over the past 7 years. Poor and very poor access to food remains far higher in rural households.

Nutritional problems in the country are marked by undernutrition and overnutrition existing alongside one another. However, national surveys on selected nutrition and health indicators show that undernutrition is a more serious concern. Both adults and children suffer the consequences of energy deficits and nutrient deficiency disorders. Much still needs to be done to provide access to health services and to effect behavior change and instill health seeking behavior among various age groups.

The Philippine Food and Nutrition Security Atlas (PFNSA) provides a political and physical map of an initial analysis of trends and the most recent available data of selected determinants of food security and malnutrition, including food production and imports, economic access to food, food consumption and utilization and relevant social parameters. The PFNSA indicators provided a picture of the national, regional and provincial situation. PFNSA is built around the indicators used by the National Government. It is deemed that this would contribute in building the geographical database targeted to help policy makers, national government agencies, local government units, non-government organizations, researchers, and interest groups in planning, deciding on the most appropriate intervention and allocating the finite resources to where the most vulnerable are.

## 1.2 Food and Nutrition Security: A Multi-dimensional Phenomena

Food security was defined in the 2006 World Food Summit, “as a state at which 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” (WFP, 2009). It is built on three pillars: food availability, food access and food utilization (Figure 1.1). How each pillar would be viewed in terms of its importance would depend on the level of aggregation and indicators being analyzed. The pillars cannot be viewed separately as the integration between the three is too tight and determining the fine line which separates one from the other is difficult.



Figure 1. Food and Nutrition Security Conceptual Framework (WFP, 2009)

When analyzed at the national level, while national production is of great interest, it is also important to examine the country’s capacity to access food from the global market. While at the household level, a different set of indicators would provide a much sensitive measure of availability, access and utilization. The impact of socioeconomic, cultural and gender inequalities on food security are more pronounced at the individual level for food consumption is not solely determined by having food on the plate.



## Food Availability

Food availability is the “physical presence of food in the area of concern through all forms of domestic production, commercial imports and food aid (WFP, 2009).” Determinants of food security include: production, trade, stocks, and transfers. These could be aggregated at the regional, national, district or community level.

## Food Access

Food access is primarily about a household’s ability to acquire adequate amounts of food, through one or a combination of own home production and stocks, purchases, barter, gifts, borrowing and food aid.

## Food Utilization

In food utilization, the households’ use of food to which they have access and an individual’s ability to absorb and metabolize the nutrients comes into play. Food preparation, feeding practices, intra-household distribution of food, nutritional and health status of individuals within the household are assessed in combination.

## Nutrition Security

Apart from food security, the inclusion of indicators of utilization emphasizes that nutrition security is equally important or more than a food security concern. Nutrition security is a situation in which all individuals and households are food-secure, have good access to preventive and curative health care, and undertake healthy and sustainable care practices (WFP, 2009).

## Vulnerability

Vulnerability is defined as exposure to risk and the lack of ability to cope with its consequences. The vulnerability of households and communities depends largely on their ability to cope with exposure to risks associated with shocks such as flood, drought, crop blight or infestation, economic fluctuation and conflict. The asset base and livelihood of a households or communities largely determine their ability to cope.

## 1.3 Selected Indicators for the Food and Nutrition Security Atlas

Indicator	Definition/Computation	Data Source
<b>Food Availability</b>		
Crop production	Rice, corn, cassava and sweet potato production at the national, regional and provincial levels	Bureau of Agricultural Statistics, 2012
Livestock and fisheries production	Water buffalo, cattle, hog, goat, poultry and fish production at the national, regional and provincial levels	Bureau of Agricultural Statistics, 2010
Food prices	Retail price of regular milled rice at the national, regional and provincial levels	Bureau of Agricultural Statistics, 2012
<b>Economic Access to Food</b>		
<i>Poverty Incidence</i>	Refers to the proportion of families (or population) with per capita income less than the per capita poverty threshold to the total number of families (population).	National Statistics Coordination Board, 2009
<i>Food Threshold</i>	The cost of the food required to satisfy nutritional requirements for economically necessary and socially desirable physical activities.	National Statistics Coordination Board, 2009
<i>Subsistence Poverty Incidence</i>	Refers to the proportion of families (or population) per capita income less than the per capita food threshold to the total number of families (population).	National Statistics Coordination Board, 2009
<i>Poverty Threshold</i>	The minimum income required to meet the food requirements and other non-food basic needs.	National Statistics Coordination Board, 2009
<i>Total Food Expenditure</i>	Actual food consumption of the family during the past week of the interview	National Statistics Coordination Board, 2009
<i>Cohort Survival Rate</i>	Proportion of enrollees at the beginning of grade and year level who reach the final grade or year level at the end of the required number of years of study.	Department of Education
<i>Basic Literacy Rate</i>	The percentage of the population who can read and write and understand simple messages in any language or dialect.	Department of Education
<i>Labor Force Participation Rate</i> <i>Employment Rate</i>	Total number of persons in the labor force/total population 15y/o and over x 100% Include all those who, during the reference period are 15 years old and over as of their last birthday and are reported either: <ul style="list-style-type: none"> <li>• At work. Those who do any work even for</li> </ul>	National Statistics Office, 2010 National Statistics Office, 2010

one hour during the reference period for pay or profit, or work without pay on the farm or business enterprise operated by a member of the same household related by blood, marriage or adoption; or

- With a job but not at work. Those who have a job or business but are not at work because of temporary illness/injury, vacation or other reasons. Likewise, persons who expect to report for work or to start operation of a farm or business enterprise within two weeks from the date of the enumerator's visit, are considered employed.

Total number of employed persons/total number of persons in the labor force x 100%

*Unemployment Rate*

Include persons 15 years and above who are without work and are currently available for work and seeking work, or are not seeking work due to the belief that there is no work, but sought work within the past six months.

National Statistics Office, 2010

Total number of unemployed persons/total number of persons in the labor force x 100%

### Food Consumption and Utilization

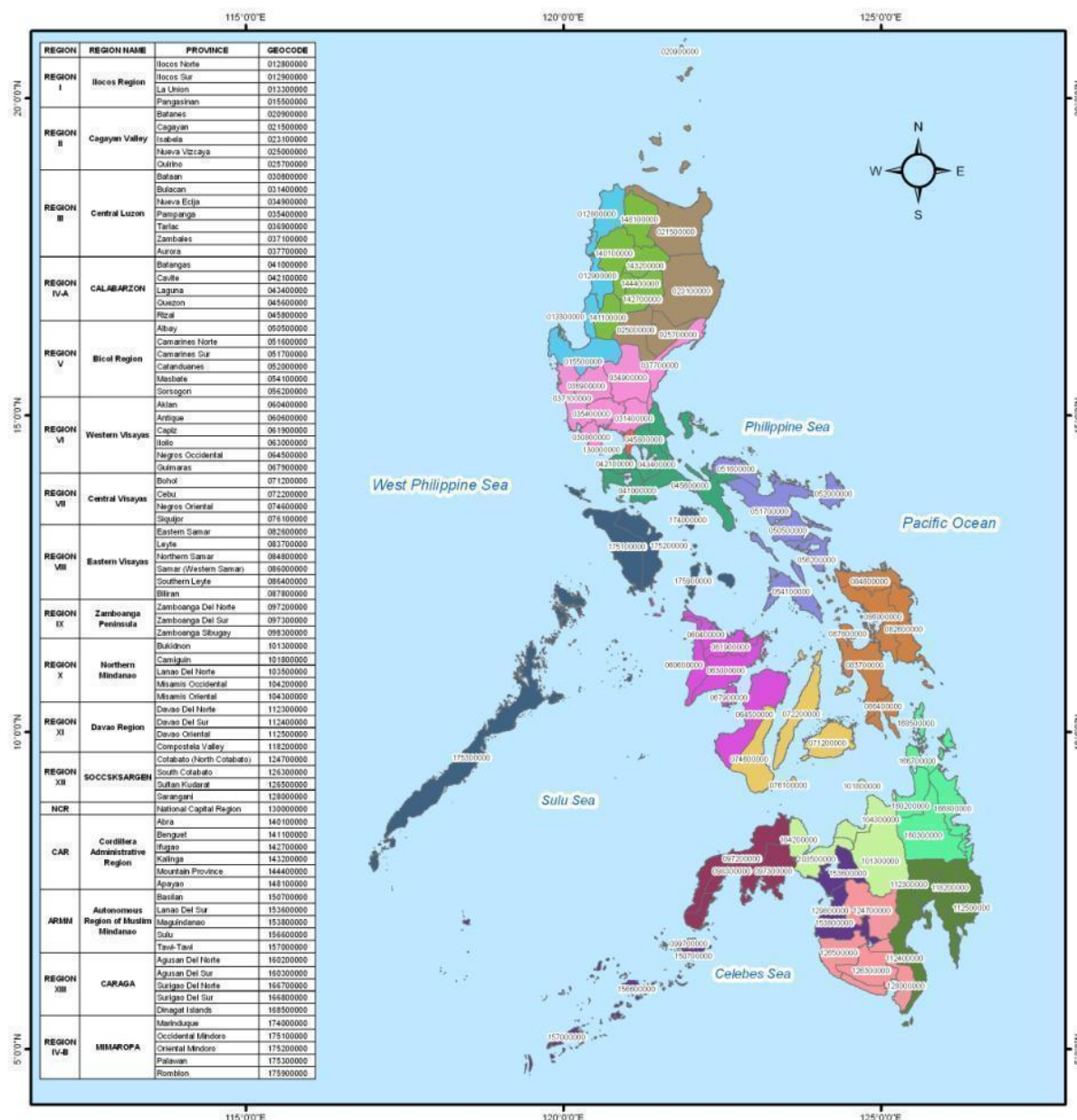
<i>Underweight</i>	For children less than 5 years, weight-for-age less than -2SD of the WHO Child Growth Standards.	Food and Nutrition Research Institute, 2008
<i>Stunting</i>	Height-for-age less than -2 SD of the WHO Child Growth Standards	Food and Nutrition Research Institute, 2008
<i>Wasting</i>	Weight-for-height greater than +2 SD of the WHO Child Growth Standards	Food and Nutrition Research Institute, 2008
<i>Low birth weight</i>	Percentage of liveborn infants that weigh less than 2500 g	National Statistics Office, 2009
<i>Under-five mortality rate</i>	Probability of dying between birth and exactly five years of age expressed per 1,000 live births.	National Statistics Office, 2009
<i>Infant mortality rate</i>	Probability of dying between birth and exactly one year of age expressed per 1,000 live births.	National Statistics Office, 2009
<i>Access to safe source of water supply</i>	Percentage of households who have access to tap water, protected wells/boreholes, or protected spring water.	National Statistics Office, 2010

### Vulnerability

<i>Natural disasters</i>	Typhoons and volcanic activities from 1999-2011.	Virola, 2008
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## Map 1. Administrative Map of the Philippines



**WFP Philippines Food Security Atlas**

Map showing the Philippine regional and provincial administrative units as of September 2011.

**Legend**

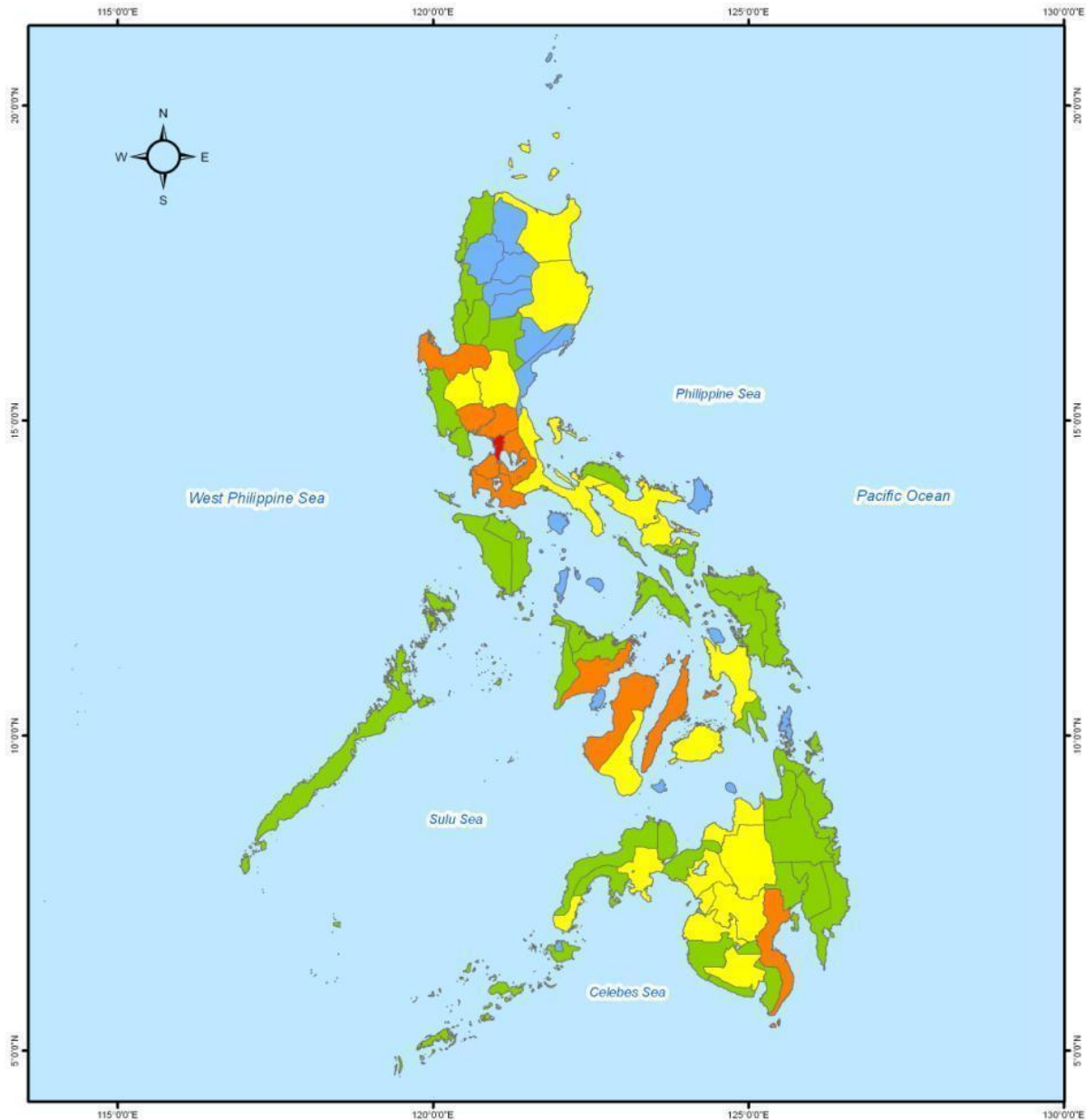
Philippine Regions	REGION IX
ARMM	REGION V
CAR	REGION VI
NCR	REGION VII
REGION I	REGION VIII
REGION II	REGION X
REGION III	REGION XI
REGION IV-A	REGION XII
REGION IV-B	REGION XIII

**Sources of Data:**  
 WFP Philippines GIS Resources  
 Philippine National Statistical Coordination Board ([www.nscb.gov.ph](http://www.nscb.gov.ph))

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Map 2. Population Map of the Philippines, 2007



**WFP Philippines Food Security Atlas**

Map showing the population of the Philippines by province based on the 2007 Census of Population.

0 100 200 400  
Kilometers

**Legend**

Philippine Population, 2007

Blue	15,974 - 279,774
Green	279,774.01 - 907,238
Yellow	907,238.01 - 1,882,900
Orange	1,882,900.01 - 3,850,989
Red	3,850,989.01 - 11,547,959

**Sources of Data:**  
WFP Philippines GIS Resources  
National Statistics Office ([www.census.gov.ph](http://www.census.gov.ph))

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## Chapter 2 - Food Availability

Food availability is assessed based on the basic concept of the amount of food which is available at national and local level, through domestic agricultural production, and through consideration of commercial imports. Many factors can influence the availability of food. These include the national policy framework related to food production, the quality of markets and commodity flows.

There are also determinants related to agricultural production which include access to land, productive inputs and financing/credit. Storage and post-harvest processes as well as agro-processing and climate-related effects are also important factors. Agricultural production is an important factor in food security, as it indirectly addresses undernutrition, through increasing food availability and by improving livelihoods and incomes of the poor, thereby increasing their capacity to feed themselves.

### 2.1 Crop Production

Government expenditure on agriculture amounted to Php 89.2 M or 5.79 percent of the total national spending in 2010. Even with the low investment on agriculture, the sector has a total contribution of 17 percent to the economy's aggregate GDP.

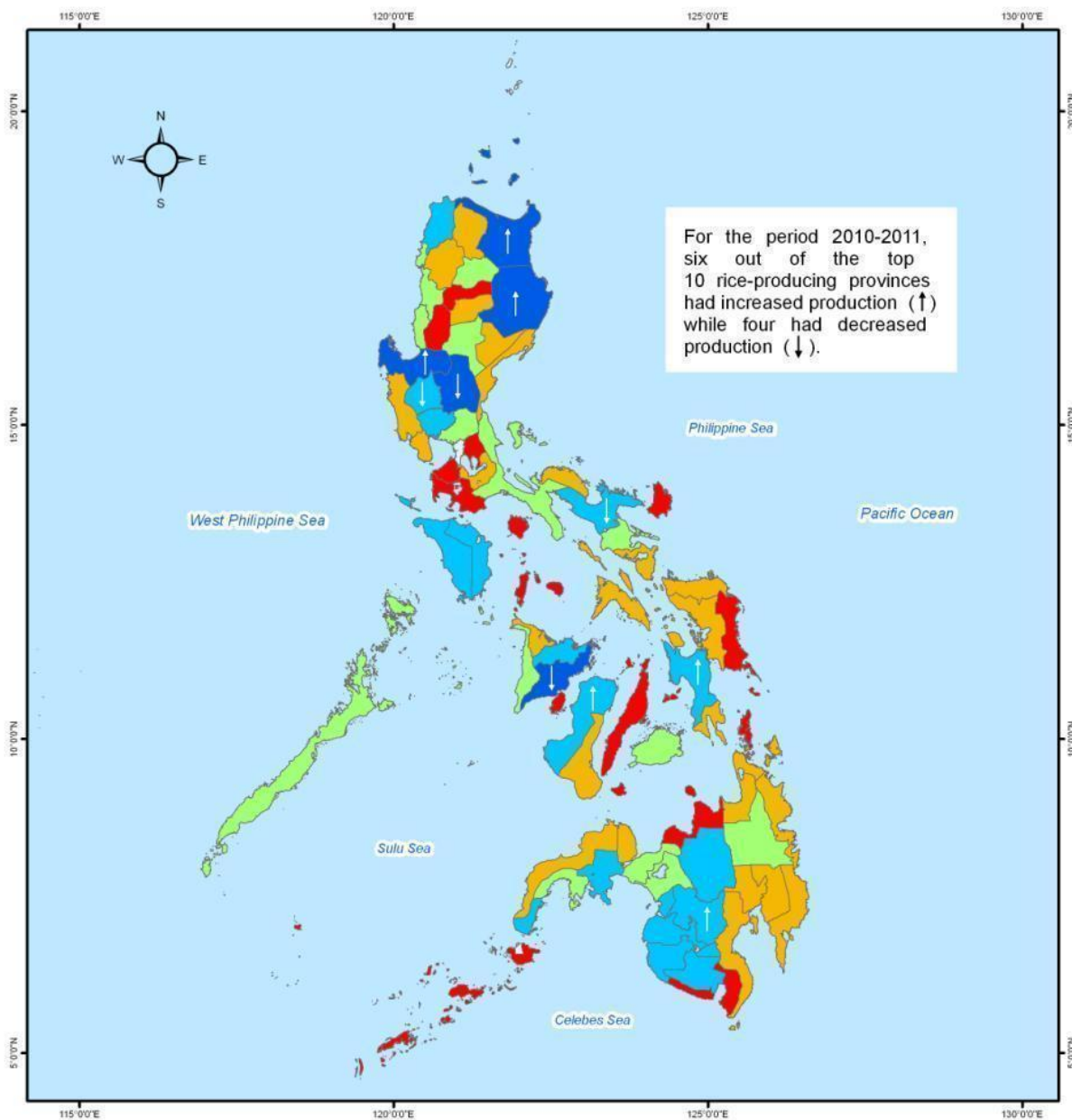
#### Rice

Rice is the principal food crop with a production level of 15.772 million metric tons for 2010 and a share of 19 percent to GDP for agriculture. Total rice production increased by 5.47 percent (16.684 million metric tons) in 2011. Luzon remains to be the biggest producer of rice at 57.01 percent of the country's total production.

The 2011 data of the Bureau of Agricultural Statistics shows that at the regional level, Central Luzon, Western Visayas, Cagayan Valley, Ilocos Region and SOCCSKSARGEN remains to have the largest contribution in the total country production. The provinces of Nueva Ecija (Central Luzon), Iloilo (Western Visayas) and Isabela (Cagayan Valley) contributed the greatest bulk in rice production.



Map 3. Rice Production in the Philippines, 2011



For the period 2010-2011, six out of the top 10 rice-producing provinces had increased production (↑) while four had decreased production (↓).

**WFP Philippines Food Security Atlas**

Map showing the production of rice in million metric tons by province in 2011.

**Legend**

Rice production, 2011 (in million metric tons)

- 958 - 53,632
- 61,903 - 138,318
- 146,666 - 287,036
- 306,726 - 526,762
- 784,622 - 1,313,487

**Sources of Data:**  
 WFP Philippines GIS Resources  
 Department of Agriculture, Bureau of Agricultural Statistics (DA-BAS) ([www.bas.gov.ph](http://www.bas.gov.ph))

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### Corn

Corn is the second largest food crop in the country and a staple food of about 20 percent of the Filipino population. Total corn production for 2010, accounts to 6.376 million metric tons of production for 2010 and a contribution to GDP for agriculture of 5 percent. In 2011, total corn yield (white and yellow grain) increased by 8.53 percent (6.971 million metric tons). Corn is mainly produced in Mindanao with total contribution of 52.31 percent to the total country production.

Regional data shows that the top 6 producers of white corn are ARMM, Northern Mindanao, SOCCSKSARGEN, Central Visayas, Davao Region, and Zamboanga Peninsula. Farmers in these areas prefer white corn production over yellow corn primarily because of the higher selling price of white corn. While for yellow corn, the largest producers are Cagayan Valley, SOCCSKSARGEN, Northern Mindanao, Ilocos Region, and Western Visayas.

All provinces are engaged in white corn production which is sold either for consumption or raw material for animal feeds. Farmers continue to grow yellow corn in all of the provinces except in the provinces of Marinduque, Dinagat Islands, Basilan, Sulu and Tawi-tawi.

### Cassava

Lanao del Sur, Bukidnon, Basilan, Sulu and Misamis Oriental are the top producers of cassava in the country in 2010. The combined yield of these provinces was 1.31 million metric tons or 62.4 percent of the total production in 2010 of 2.10 million metric tons.

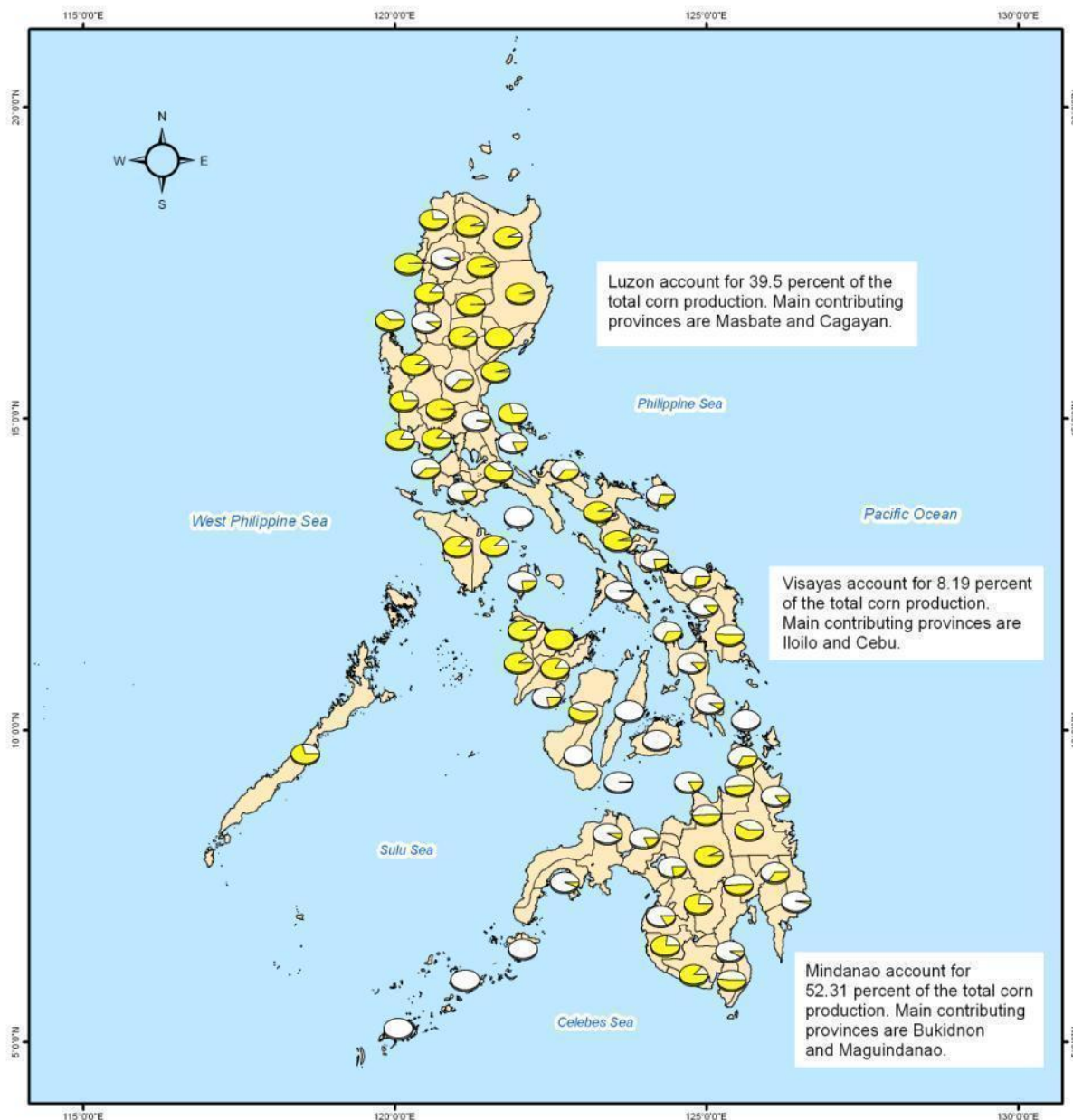
### Sweet Potato (Kamote)

The country produced 541,265 metric tons of sweet potatoes in 2010. At the regional level, Eastern Visayas, Bicol Region, CARAGA, Western Visayas, and Central Visayas are the leading producers of sweet potato. Of the 80 provinces, Leyte is the leading producer of sweet potato in the country (61,896 metric tons).





## Map 4. Corn Production in the Philippines, 2011



<p><b>WFP Philippines Food Security Atlas</b></p> <p>Map showing the production of corn in million metric tons by province in 2011.</p>	<p><b>Legend</b></p> <p>Corn production, 2011 (in million metric tons)</p> <ul style="list-style-type: none"> <li> Corn production, 2011 (in million metric tons)</li> <li> White corn</li> <li> Yellow corn</li> </ul>	<p><b>Sources of Data:</b> WFP Philippines GIS Resources Department of Agriculture, Bureau of Agricultural Statistics (DA-BAS) (<a href="http://www.bas.gov.ph">www.bas.gov.ph</a>)</p> <p><b>Disclaimer</b> Information contained in the map were derived from various sources. Users are advised to check the original sources of data to ascertain the authenticity of information. The boundaries, colors, denominations, and other information shown on this map do not imply any judgment on the part of WFP concerning the legal status of any territory or the endorsement or acceptance of such boundaries.</p>
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## 2.2 Livestock Production

In 2010, the livestock subsector accounted for 15.97 percent of the total agricultural output and poultry subsector contributed 13.17 percent. Livestock and poultry production are valued at Php 41,974,740 and Php 49,378,520, respectively.

Backyard farms account for 99.6 percent of the total water buffalo inventory of 3.13 million. Regions which have the highest contribution in production, both backyard and commercial, include Western Visayas (10.27 percent), Eastern Visayas (10.22 percent), Cagayan Valley (9.51 percent), Bicol Region (8.21 percent) and SOCCSKSARGEN (8.06 percent).

Cattle inventory, for 2010, was 2,546,919 with a large proportion mainly from backyard farming (BAS, 2011). Ilocos region remains as the top producer to cattle in the country, contributing 11.49 percent to the total cattle industry.

Hog industry is continuing to grow. The total inventory was 12,709,205 with 67.5 percent and 32.5 percent contribution from backyard and commercial farming, respectively (BAS, 2011). The largest commercial farms are in Central Luzon. These farms have a total contribution of 34.16 percent to the total hog production. While for backyard farming, Western Visayas is the top contributor (14.39 percent).

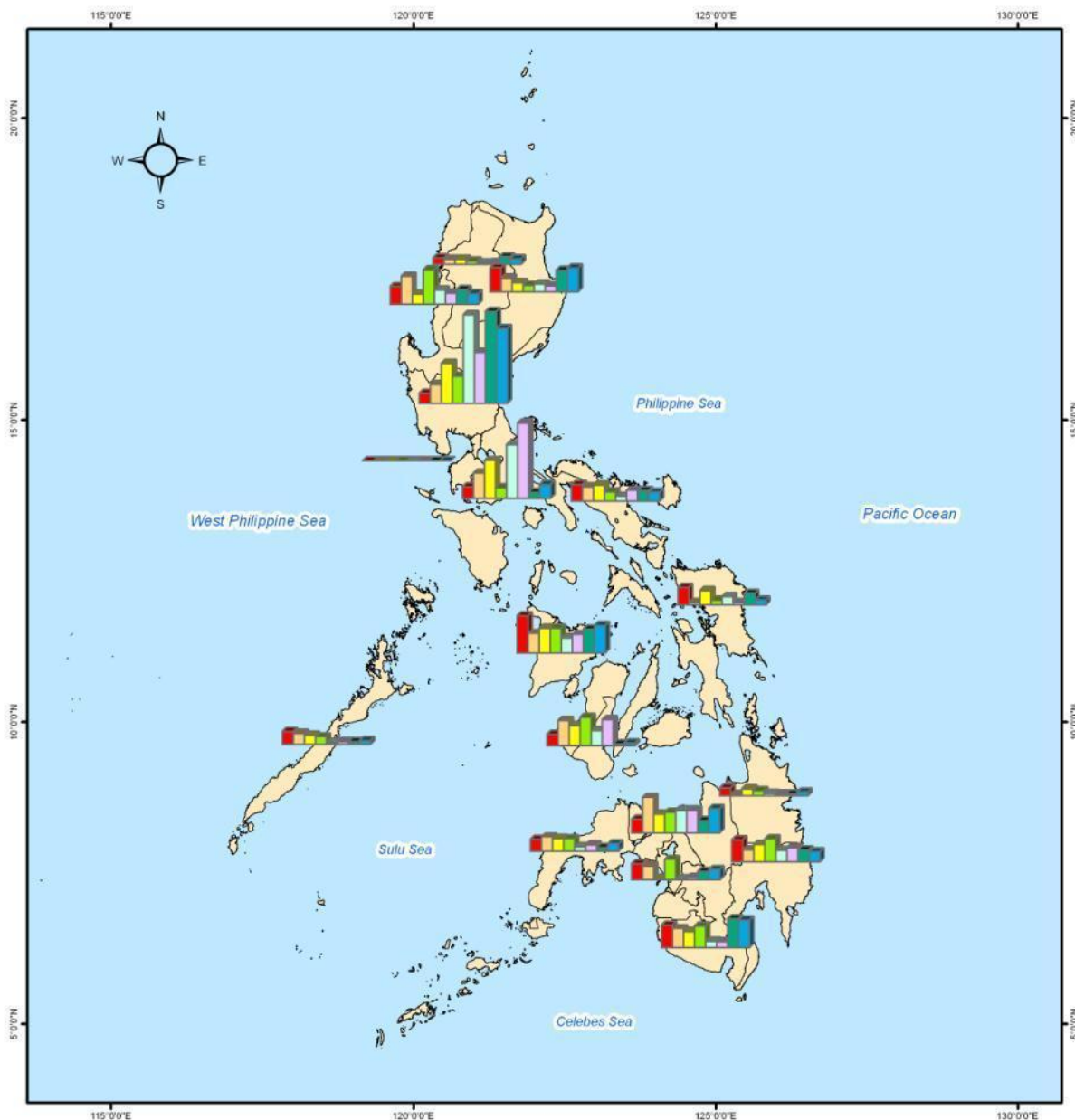
Total goat production in 2010 estimated at 3.94 million. This was 7.12 percent lower than the 2009 inventory of 4.22 million. Backyard farms remains to be the main (98.42 percent) goat raisers in the country. Western Visayas, Central Visayas, Ilocos Region, Davao Region and Central Luzon are the top goat producing regions in the country.

Chicken production in 2010 (161,220,000) is lower by 3.72 percent than the 2009 production inventory. About 47 percent of the total chicken production is free-range chicken mostly raised in backyard farms (BAS, 2011). This can be attributed to the increase in demand for organic products. Commercial farms primarily raise broilers and layers which account for 35 percent and 18 percent of the total inventory, respectively. A large proportion of free-range chicken are raised in Western Visayas with a share of 17.27 percent to the annual total inventory.

Central Luzon has the biggest share (28.86 percent) in the commercial production of broilers and CALABARZON for layers (39.22 percent). Total egg production for 2010 is 193,629 metric tons, a 5.37 percent increased from the previous year's level. This was attributed to the increase in layer inventory in the top producing regions. Duck inventory was at 10.07 million in 2010, with total contribution of 74 percent from backyard farms and 26 percent from commercial farms. Main contribution in total inventory was from Central Luzon (BAS, 2011). Egg production was 18,510 metric tons.



## Map 5. Livestock and Poultry Production in the Philippines, 2010



**WFP Philippines Food Security Atlas**

Map showing the production of livestock and poultry by region.

**Legend**

- Carabao
- Cattle
- Hog
- Goat
- Chicken
- Chicken\_Eggs
- Duck
- Duck\_Eggs

**Sources of Data:**  
 WFP Philippines GIS Resources  
 Department of Agriculture, Bureau of Agricultural Statistics (DA-BAS) ([www.bas.gov.ph](http://www.bas.gov.ph))

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## 2.3 Fisheries

Main fish production in the country is an unloading from three main sectors which includes: aquaculture, municipal and commercial fishing. In 2011, the total fish volume produced reached 4.98 million metric tons (BAS, 2011). The biggest unloading was coming from the aquaculture sector (2.61 million metric tons), followed by municipal (1.33 million metric tons) and commercial (1.04 million metric tons) sectors.

The biggest share in aquaculture was coming from ARMM, MIMAROPA and Zamboanga Peninsula. Municipal fisheries have a contribution of 26-30 percent in the total fish production of the country. Of this total production, 44 percent was from Luzon, 32 percent from Mindanao and 24 percent from Visayas. During the first quarter of 2011 a drop in production was observed from the municipal fisheries. This was due to the flooding in most of the provinces brought about by monsoon rains and the oil price hikes which limited the operations of the fisherfolks.

## 2.4 Food Prices

Rice have been subjected to the greatest volatility with rice price inflation reaching 29.1 percent in 2008 and sharply dropped to 7.5 and 1.1 in 2009 and 2010, respectively. The price index for rice showed a similar trend.

Looking at the historical price of rice, over the longer term, it remains at a much higher level at the end of 2011 than at pre-crisis levels. Retail price of regular milled rice ranges from Php 28.25 to Php 35.15 across the provinces in the country. The highest reported retail prices of regular milled rice are in Mountain Provinces, Camiguin and Lanao del Norte. This continues to pose additional challenges to poor households that have been coping with the income shocks associated with the earlier food, fuel and economic crises.

## 2.5 Food Availability Disconnect

Domestic agricultural production and imports from world markets are the main sources of food in the country. Local agricultural production can meet the demands of domestic consumption, however rice production remains insufficient. Agricultural activities account for roughly 33 percent of all economic activities therefore almost all regions produce agricultural products. However, some regions are producing more than other regions. In the case of NCR, it is highly dependent on food supplies coming from other regions.

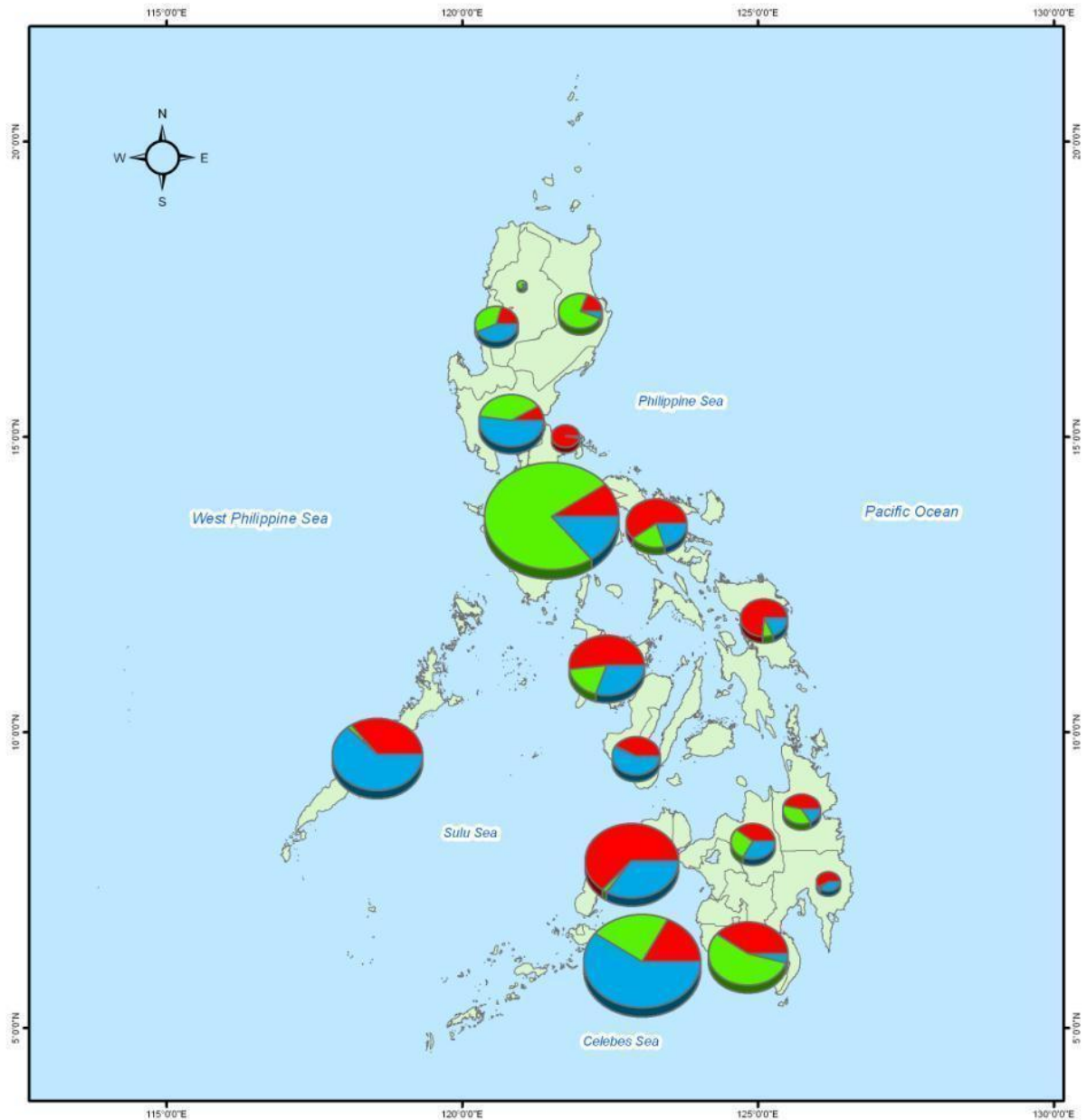
Limited access to credit and financing and limited irrigation infrastructure coupled with issues on climate change, natural and man-made disasters and environmental degradation are the major challenges that farmers have to contend with. Market mechanisms are also seen as

disrupting food availability in the country. Price volatility makes both producers and consumers increasingly susceptible to poverty. It also has major long-term impacts on nutritional status and livelihood development.

The current government's intervention to market procedures is in the form food subsidies and implementation of reinvigorated feeding programmes. However, due to insufficiencies in carrying out the programme, the intended effect of the intervention has not been realized. However, given the seriousness of the present administration to work towards food self-sufficiency beginning 2013 and the potential of the local agriculture to produce food and meet local demands.



Map 6. Fisheries Production in the Philippines, 2010



**WFP Philippines Food Security Atlas**

Map showing the production of fisheries in million metric tons by region in 2010.

0 100 200 400  
Kilometers

**Legend**

Fisheries production, 2010 (in million metric tons)

24

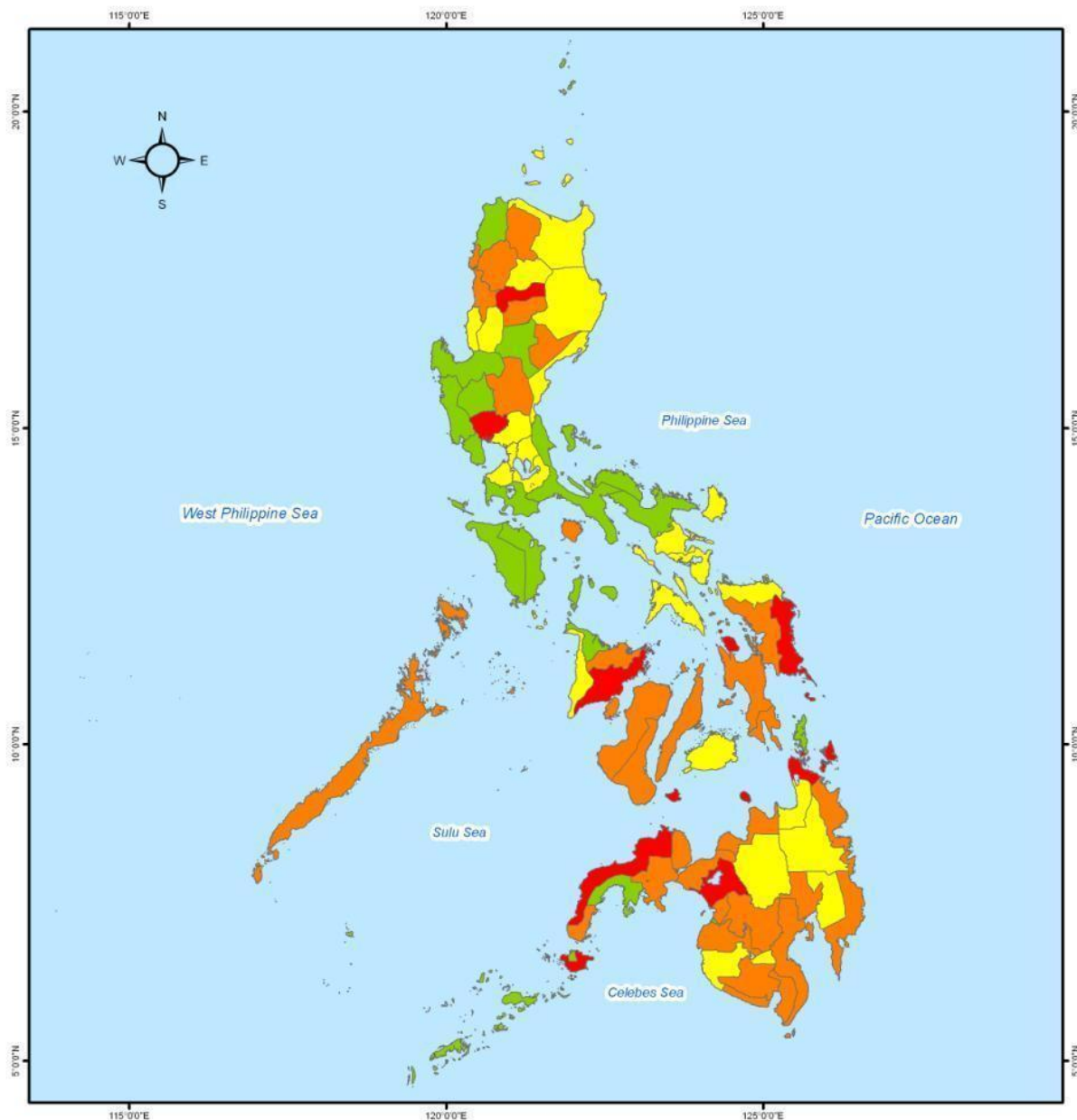
- Marine
- Inland
- Aquaculture

**Sources of Data:**  
WFP Philippines GIS Resources  
Department of Agriculture, Bureau of Agricultural Statistics (DA-BAS) ([www.bas.gov.ph](http://www.bas.gov.ph))

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Map 7. Average Price of Milled Rice in the Philippines, 2011



**WFP Philippines  
Food Security Atlas**

Map showing the price of milled rice in Philippine pesos by province in 2011.

**Legend**

Average price of milled rice (in Philippine pesos)

Green	28.25 - 29.67
Yellow	29.77 - 31.12
Orange	31.20 - 33.02
Red	33.25 - 35.15

**Sources of Data:**  
WFP Philippines GIS Resources  
Bureau of Agricultural Statistics,  
Department of Agriculture ([www.bas.gov.ph](http://www.bas.gov.ph))

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## Chapter 3 - Economic Access to Food

### 3.1 Household Poverty and Food Insecurity

Poverty is a multi-dimensional concept and to a large extent the national and regional estimates of poverty in the Philippines are derived from its income dimension. Estimates show that 9 out of the 15 provinces with the highest incidence of poverty are in Mindanao. Income-based measures show that the greatest poverty incidences are in CARAGA (47.8 percent), ARMM (45.9 percent), Bicol (45.1 percent) and Zamboanga Peninsula (43.1 percent) (NSO, 2009).

For subsistence incidence of poverty, CARAGA (25.3 percent), Zamboanga Peninsula (23.5 percent), Northern Mindanao (20.7 percent) and Eastern Visayas (19 percent) are the provinces with the highest reported rates. The three regions with the least poverty and subsistence incidence are in Luzon, these being NCR, Central Luzon and Cagayan Valley.

### 3.2 Food Expenditure

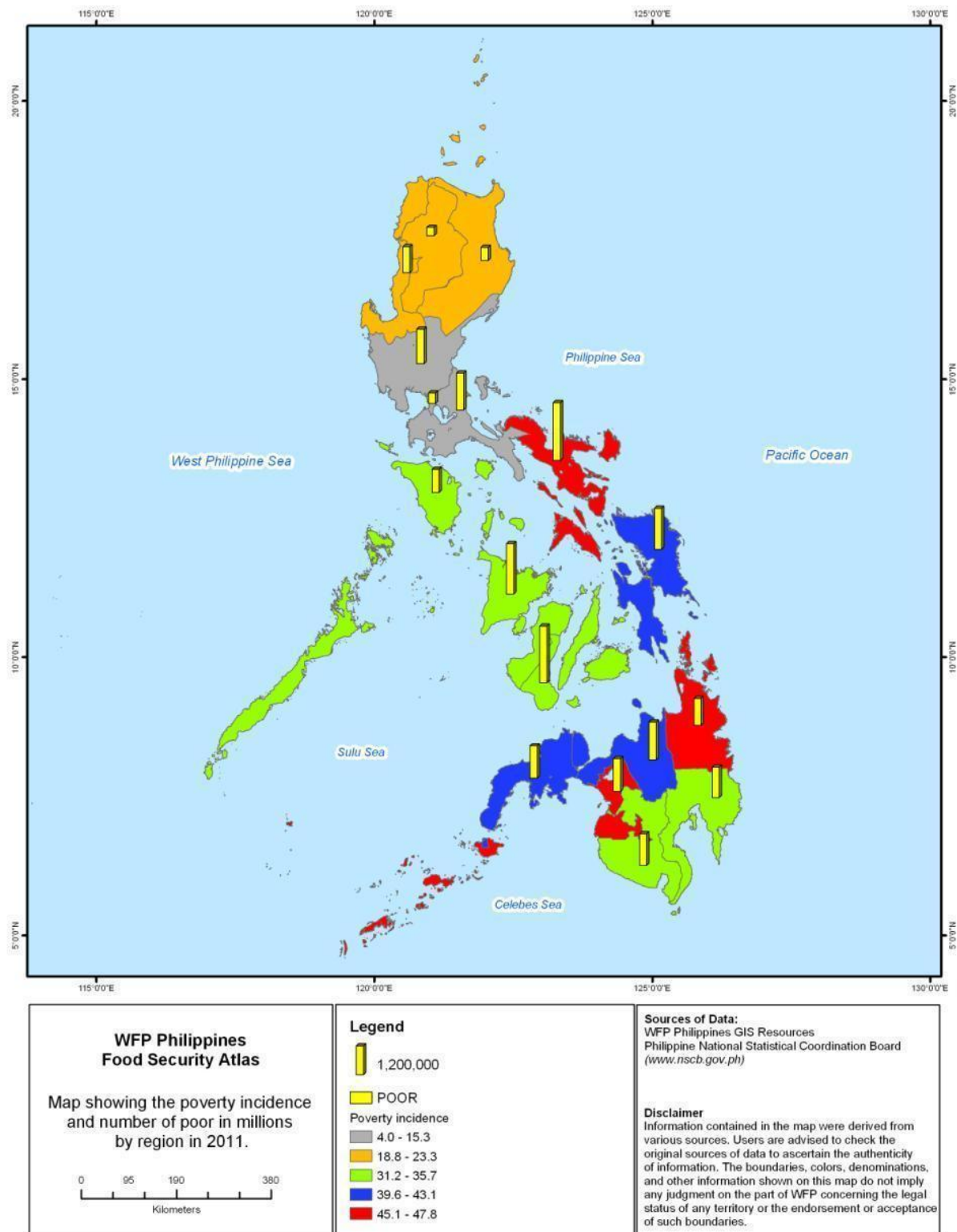
The proportion of a household's total expenditures on food is a useful measure of food access and also as a measure of vulnerability to future food insecurity. Households that spend high proportions of their incomes on food (e.g. 70 percent or more) are vulnerable because if their income is reduced, for example owing to, natural disaster, disease onset, or price hikes, they will have limited reserve in meeting their food needs. From a conceptual standpoint, the food access measure derived from household expenditure surveys is a good indicator of food insecurity.

Of all the regions, ARMM has by far the highest proportion of families (84.5 percent) spending more than 50 percent of total expenditure on food. There are five other regions where more than two-thirds of families spend more than half of total expenditure on food, these being Zamboanga Peninsula 72.7 percent, CARAGA 69.6 percent, Bicol 68.6 percent, SOCCSKSARGEN 68.3 percent and Eastern Visayas 66.9 percent. There are only four regions where less than half of families spend more than 50 percent of total expenditure on food and these could be assumed to have the best overall food access, these being NCR 30.6 percent, CALABARZON 45.7 percent, CAR 46.9 percent and Central Luzon 47.7 percent.



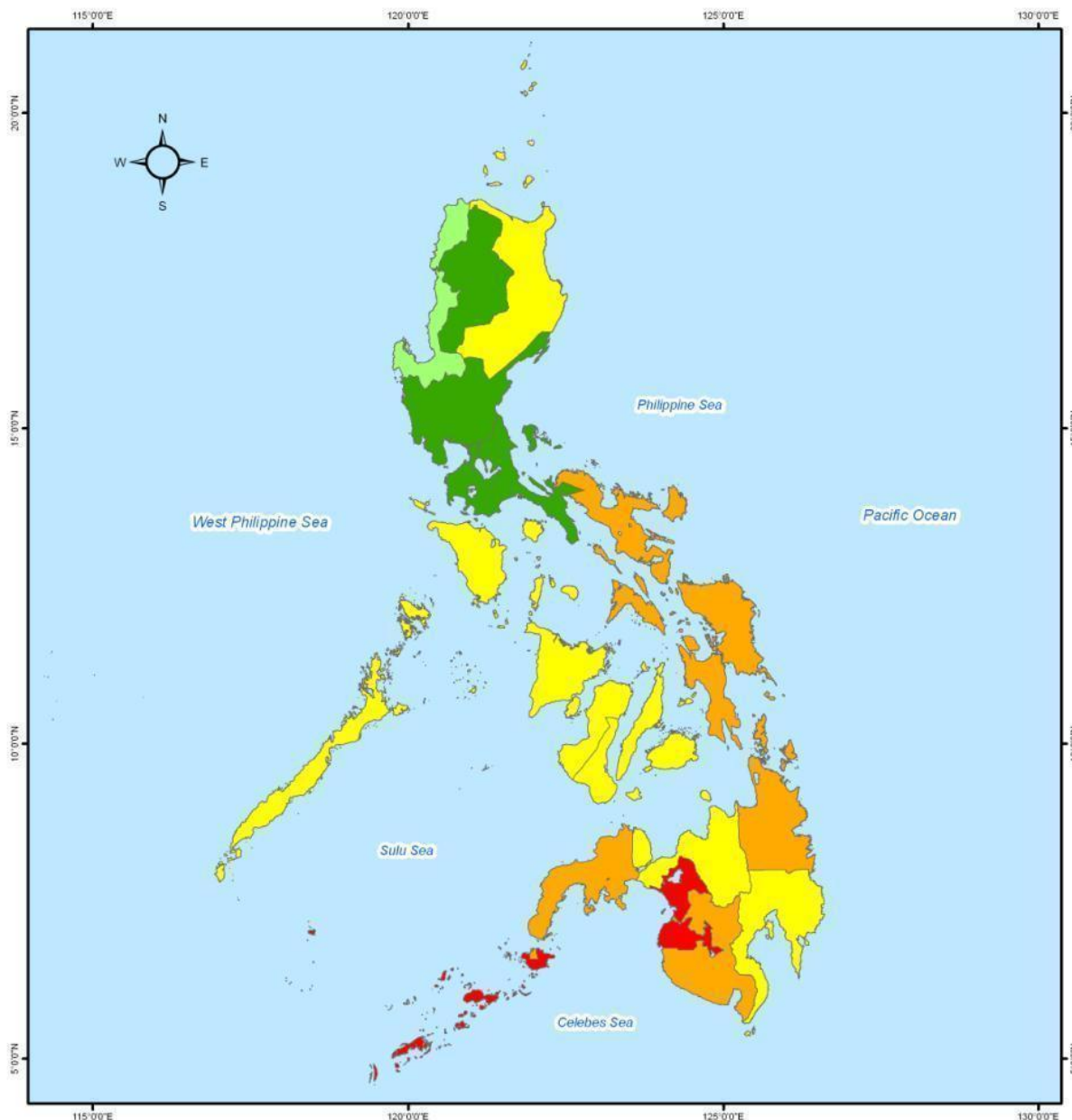


## Map 8. Poverty Incidence and Number of Poor in the Philippines, 2011





**Map 9. Proportion of Household Spending on Food in the Philippines, 2009**



**WFP Philippines  
Food Security Atlas**

Map showing the proportion of household spending on food by region. Intensity of proportion spending is >50 percent.

0 95 190 380  
Kilometers

**Legend**

Household spending on food, 2009

30.60% - 47.70%
47.701% - 58.50%
58.501% - 64.50%
64.501% - 72.70%
72.701% - 84.50%

**Sources of Data:**  
WFP Philippines GIS Resources  
NSO Family Income and Expenditure Survey, 2009

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### 3.3 Education

The regional pattern of education indicators shows some disparity across the country. The cohort survival rates in elementary schools in SY 2008-09 fared badly in all regions in Mindanao with the worst being in ARMM at 40.75 percent despite having high net enrolment rate for elementary level. Cohort survival rates in the six best performing regions were above 80 percent and these were mainly in Luzon; NCR 87.51 percent, Ilocos Region 86.7 percent, CALABARZON 83.77 percent, Central Luzon 83.02 percent, Cagayan Valley 81.58 percent, and Central Visayas 81.39 percent.

National Capital Region (NCR) and Region I (Ilocos Region) has the highest basic literacy rate, 99.2 percent and 98.2 percent, respectively, higher than the national average of 95.6 percent (TESDA, 2011). ARMM has the lowest reported basic literacy rate of 81.5 percent.

### 3.4 Employment and Income Sources

Labor force participation rate increased by 0.77 percentage points from 64.1 percent in 2010 to 64.6 percent in 2011 (NSO, 2011). An increase in employment rate (93 percent) and a consequent decrease in unemployment (7 percent) were reported for 2011. When disaggregated according to sex, the employment rate is 93.1 percent among women and 92.4 percent for men. Underemployment affects 19.3 percent of all workers in the country.

NCR has the lowest employment rate (88.5 percent) and highest unemployment rates (11.5 percent) when compared with other regions (NSO, 2011). This is a clear indication of rural-urban migration that is widely happening in the country as a livelihood strategy.

ARMM ranks third in terms of employment rate (96.1 percent) as shown in the 2010 data of the National Statistics Office. Unemployment rate was estimated at 3.9 percent. Despite the intermittent armed-conflict in ARMM and lack of investments in the industry and service sector, the high employment rate in ARMM was attributed to the significant increase of job opportunities in the agricultural and fisheries sectors and an expansion in finance loans.

### 3.5 Migration and Remittances

The number of Overseas Filipino Workers (OFWs) was estimated at 2.043 million in 2010 (NSO, 2010). OFWs with existing contracts to work abroad are 94.9 percent of the total OFWs. There are less women working abroad (47.7 percent) than men (52.3 percent). Majority of the OFWs belong to the 25-29 y/o group (25 percent). Thirty two percent of these OFWs are laborers and unskilled workers and 15.1 percent are employed as service workers and shop and market sales workers. The total remittance for 2010 was estimated at 141.2 billion pesos.

The largest proportion of OFWs originated from CALABARZON (16 percent) followed by Central Luzon (14.4 percent) and NCR (13.8 percent). Saudi Arabia and United Arab Emirates were reported as the preferred destination of work with 22.1 percent and 15.1 percent OFWs, respectively. Less than 2 percent of the labor force in CARAGA, MIMAROPA and CAR seek employment abroad.

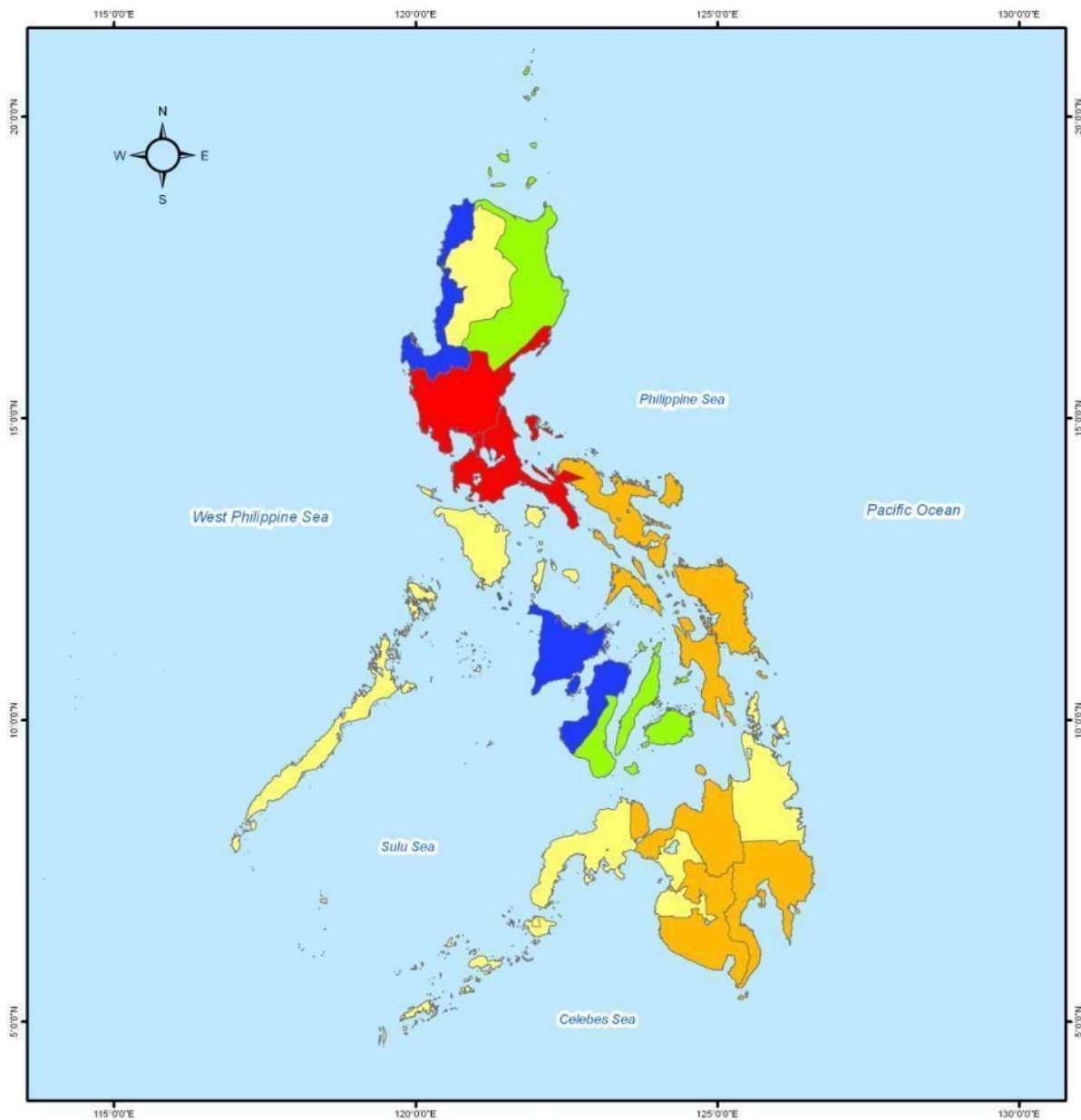
### 3.6 Access to Roads

Roads are important means for food and services to become available and be accessible to people. In the Philippines, the roads are classified as national (i.e., primary, secondary) and local roads (i.e., provincial, municipal, and barangay). Primary roads are arteries that connect major cities (with a population of at least 100,000 people as of year 2000) while secondary roads connects cities to primary roads, major ports and ferry terminals, airports, tourist service centers and provincial capitals within the same region.

As of 2000, the total length of primary roads (5,872 kilometers) and secondary roads (12,557) runs a total of 18, 429 kilometers. The length of local roads equals 10,117 kilometers. Most of the primary and secondary road networks are located in urbanized areas such as the National Capital Region, Central Luzon and CALABARZON.



**Map 10. Proportion of Overseas Filipino Workers (OFWs) by Region of Origin, 2011**



**WFP Philippines Food Security Atlas**

Map showing the proportion of OFWs by region of origin in 2011.

**Legend**

Proportion of OFWs, 2011

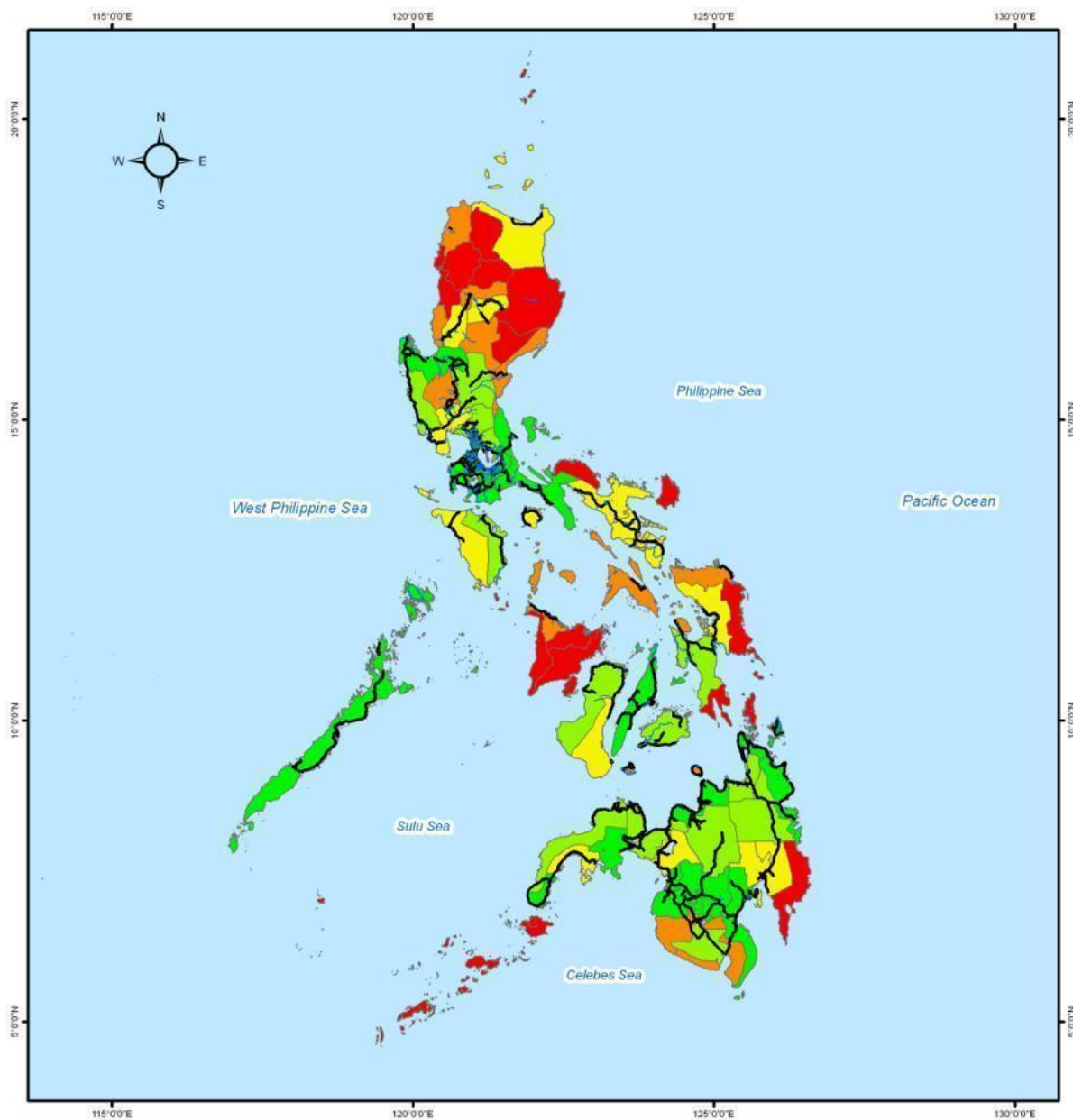
Yellow	1.3% - 2.4%
Orange	2.401% - 4.2%
Green	4.201% - 6.1%
Blue	6.101% - 9.2%
Red	9.201% - 16.4%

**Sources of Data:**  
 WFP Philippines GIS Resources  
 NSO Family Income and Expenditure Survey, 2009

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Map 11. Length of Primary Roads in the Philippines, 2006



**WFP Philippines Food Security Atlas**

Map showing the distribution of primary roads and the length of primary roads per province.

0 100 200 400  
Kilometers

**Legend**

— Primary roads	■ Areas without primary road
— Secondary roads	■ 0.000001 - 0.690324
— Tertiary roads	■ 0.690325 - 1.200690
	■ 1.200691 - 1.966043
	■ 1.966044 - 4.877742

Length of primary roads (in kms)

**Sources of Data:**  
WFP Philippines GIS Resources  
Department of Public Works and Highways (DPWH)  
and the Department of Interior and Local Government (DILG)

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## Chapter 4 - Food Consumption and Utilization

### 4.1 Food Consumption Patterns

A typical Filipino diet is a combination of rice, fish and vegetables that is equivalent to 861 grams of food in raw or purchased form. The 2008 estimate is 2.9 percent (886 grams) lower than the 2003 value (FNRI, 2008). Among households, rice, sugar and coconut oil are the most commonly consumed food items. Mean one-day per capita consumption of rice is 307 grams. Fish and fish products account for some 12.8 percent of dietary intake (110 grams) and vegetables (12.8 percent) are also consumed in the same amount. Meat products and poultry account for around 9.6 percent of the typical one-day diet and fruits contribute some 6.3 percent. The rest of the major food groups were each consumed in amounts less than 5 percent of the average diet; sugar (17 grams) and oil/fats (15 grams) each contributes around 2 percent.

There is a variation in the consumption of rice, with ARMM region having the highest relative mean daily per capita rice consumption (372g), followed by Western Visayas (367g), and CAR (362g). There is an insignificant amount of corn in the diet in 11 of the 17 regions. Central Visayas has the highest average consumption of corn at 81g per capita per day and the lowest consumption of rice at 272g, as corn is also a regional staple food. Other regions that take corn in significant proportion as staple food in addition to rice are Zamboanga Peninsula and Northern Mindanao.

When evaluated against the Recommended Energy and Nutrient Intakes for Filipinos (RENI), only 33.1 percent households have an energy intake of 100 percent (1867 kcal). About 57 percent of these households are able to meet the estimated average requirement (EAR) for protein and less than 20 percent for iron, calcium and riboflavin. This would mean that for the country to reach its MDG target of eradicating extreme poverty and hunger, an annual reduction of 5 percent in the proportion of energy-deficient households must be reached until 2015. Across the regions, Western Visayas has the lowest reported mean one-day per capita energy consumption followed by Northern Mindanao and ARMM. For vitamin A (retinol equivalent), calcium and riboflavin estimated values were lowest in ARMM.

In 2010, the total available rice for utilization per capita is 308.93 gram per day or 112.76 kilograms per year. Per capita availability of corn is 44.3 grams per day. Root crops are often consumed as an alternative to rice and corn. Cassava availability for utilization is estimated at 6.25 grams/day/capita and 14.93 grams/day/capita for sweet potato.

## 4.2 Nutritional Status

Using the WHO cut-off values to establish levels of public health significance, regional data show that underweight is of high public health significance in 12 of the 17 regions. When ranked according to magnitude, MIMAROPA (26.6 percent), Bicol (26.4 percent) and Eastern Visayas (26.4 percent) are the top three regions (FNRI, 2008).

When viewed at the provincial level, the magnitude and severity of underweight prevalence were found to be very high in 9 of the 80 provinces. Three of these provinces are in Eastern Visayas [Biliran (37.3 percent), Northern Samar (31.8 percent), and Western Samar (30.1 percent)], two in Zamboanga Peninsula [Zamboanga Sibugay (31.1 percent) and Zamboanga del Norte (30 percent)], and the rest in Bicol (Masbate, 32.5 percent), MIMAROPA (Romblon, 30.6 percent), Western Visayas (Antique, 30.8 percent), and SOCCSKSARGEN (Sultan Kudarat, 30.5 percent).

Chronic malnutrition as a result of primary or secondary causes is often measured using the height-for-age index. Stunting among 0-5-year old children is 32.3 percent with 10.2 percent considered severely stunted. Based on the WHO cut-offs for public health significance, a very high magnitude of stunting was observed in Eastern Visayas (41.1 percent) and Zamboanga Peninsula (40.3 percent). High and medium magnitudes of stunting were reported in 11 and 4 regions, respectively. Three provinces with very high magnitudes of stunting were found in Luzon (Romblon, Masbate and Sorsogon), four in Visayas (Antique, Biliran, Northern Samar and Western Samar) and eight in Mindanao (Zamboanga del Norte, Zamboanga Sibugay, Bukidnon, Lanao del Norte, Davao Oriental, Sarangani, Sultan Kudarat and Agusan del Sur).

Weight-for-height is a sensitive index of current nutritional status as a consequence of a recent and severe process, pathological or not, that led to a significant weight loss (WHO, 1995). Seven out of 100 children in the country are thin/wasted. Serious magnitude of thinness/wasting among children 0-5-year old was reported in ARMM. The prevalence levels in all of the regions except for Central Visayas were classified as poor based on the WHO cut-offs.

## 4.3 Health

### Child Health

Low birth weight has short- and long-term health consequences. Low birth weight is a major determinant of mortality, morbidity, disability and possible long-term impact on health outcomes later in adult life. At the national level, low birth weight was estimated at 20 percent with a range of 0.3 percent-22.6 percent across the 80 provinces.

Under-five mortality rate is used as an indicator of the level of child health and overall development in countries. In 2008, infant mortality rate (between birth and first birthday) was 25 per 1000 live births and most of these deaths occur during the first month of life (16 per



1000). The top three leading causes of infant mortality are bacterial sepsis, respiratory distress and pneumonia. Under-5 mortality rate (between birth and fifth birthday) is 34 per 1000 live births. ARMM has the highest reported infant and under-5 mortality rate, 56 per 1000 live births and 94 per 1000 live births, respectively.

### Maternal Health

More pregnant women (91 percent) are receiving antenatal care from a skilled provider. In the vast majority of regions, at least 90 percent of women received antenatal care from a health professional; however, in ARMM only 47 percent seek. Ninety three percent of women in CAR and SOCCSKSARGEN received antenatal care. Most births still occur at home (56 percent) and this is more common in the rural areas (70 percent) with about 36 percent assisted by traditional birth attendant (NSO, 2009).

Maternal mortality ratio (MMR) is at 162 per 100,000 live births. The Philippines will not likely meet the MDG target of reducing maternal mortality ratio to 53 per 100,000 live births by 2015.

### Water, Sanitation and Hygiene

Unsafe water and poor sanitation have serious consequences to households. Health systems are overwhelmed and national economies suffer. Access to safe drinking water and proper sanitation is indispensable to sustainable development.

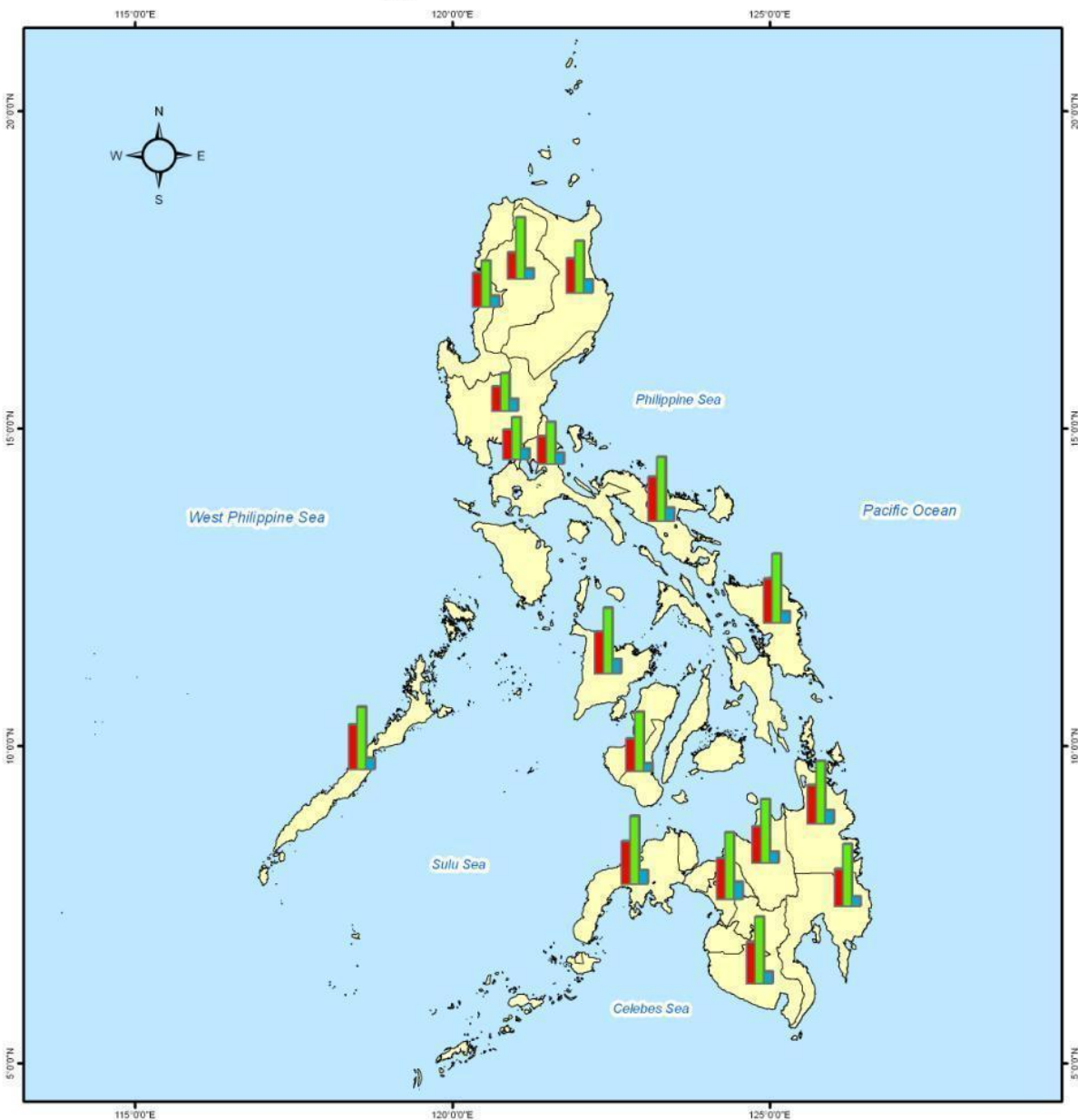
Majority (84 percent) of the Filipino families had access to safe source of water supply (NSO, 2010). However, some 16 percent of families still rely on unprotected wells, developed and undeveloped springs, river streams, ponds, lakes or dams, rainwater, and tanker trucks or peddlers for water. Only four regions in the country have over 90 percent of families with access to safe water: Central Luzon (96 percent), Cagayan Valley (93 percent), Ilocos (93 percent) and National Capital Region (92 percent). In contrast, only 49 percent of families in ARMM have access to safe water.

### Health Facilities

Health facilities in the communities are vital in the promotion of sound behavior and the prevention and treatment of diseases. Only 18 percent of the 80 provinces in the country have a Barangay Health Station (BHS) to population ratio of 1:3,000. At the provincial level, there is wide variation on per capita expenditure on health, nutrition and population control.



**Map 12. Nutritional Status of Children 0-5 Years Old in the Philippines**



**WFP Philippines  
Food Security Atlas**

Map showing the estimates of proportion of the nutritional status of children 0-5 years old.

0 95 190 380  
Kilometers

**Legend**

Nutritional status of children under 5

21

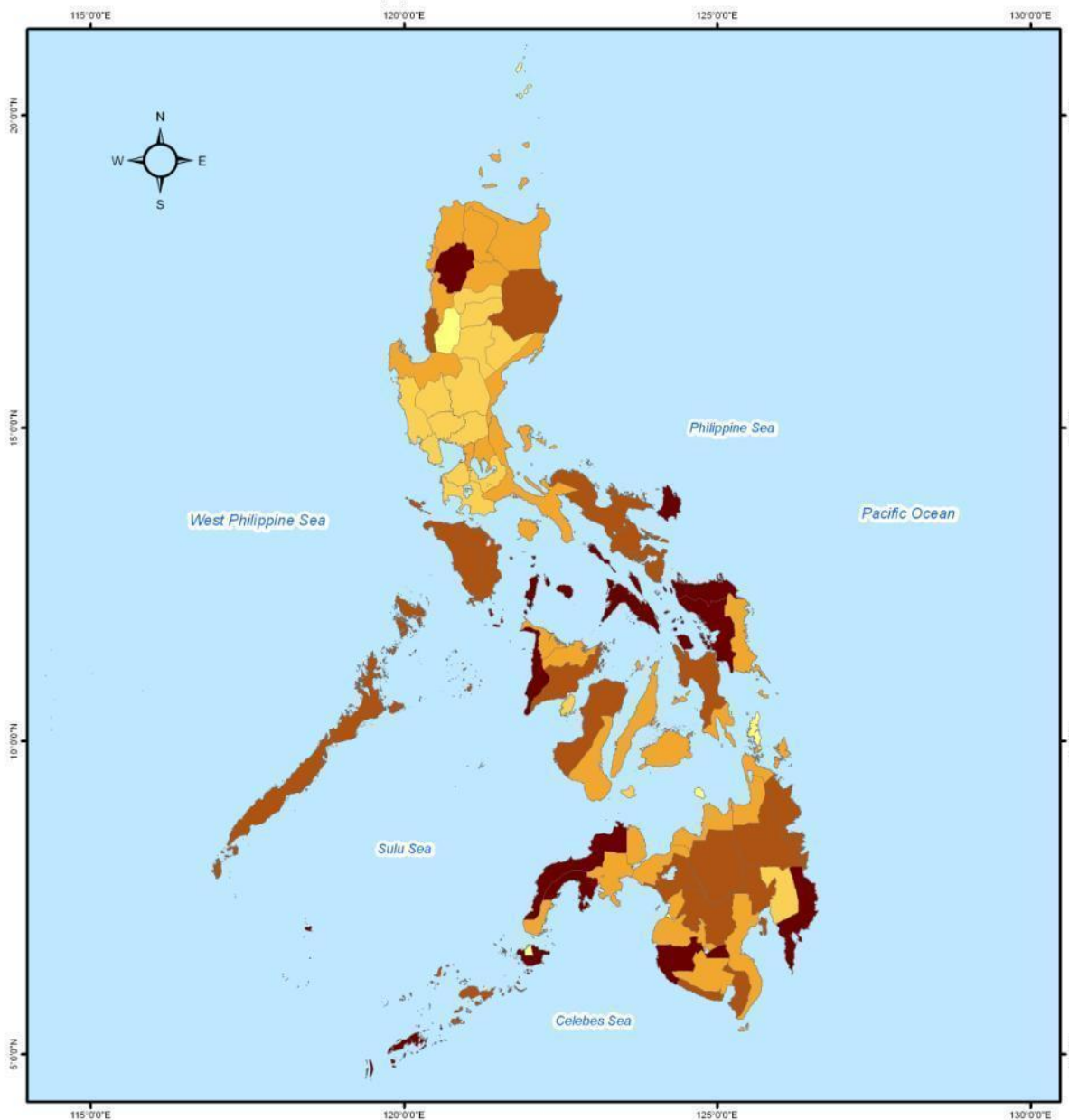
- Underweigh
- Stunting
- Wasting

**Sources of Data:**  
WFP Philippines GIS Resources  
FNRI Philippine Nutrition Facts and Figures, 2008

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**Map 13. Percentage of Underweight Children Under 5 in the Philippines, 2008**



**WFP Philippines Food Security Atlas**

Map showing the distribution of undernourished (underweight) children 0-5 years old by province in 2009.

0 100 200 400  
Kilometers

**Legend**

Percentage of underweight children, 2008

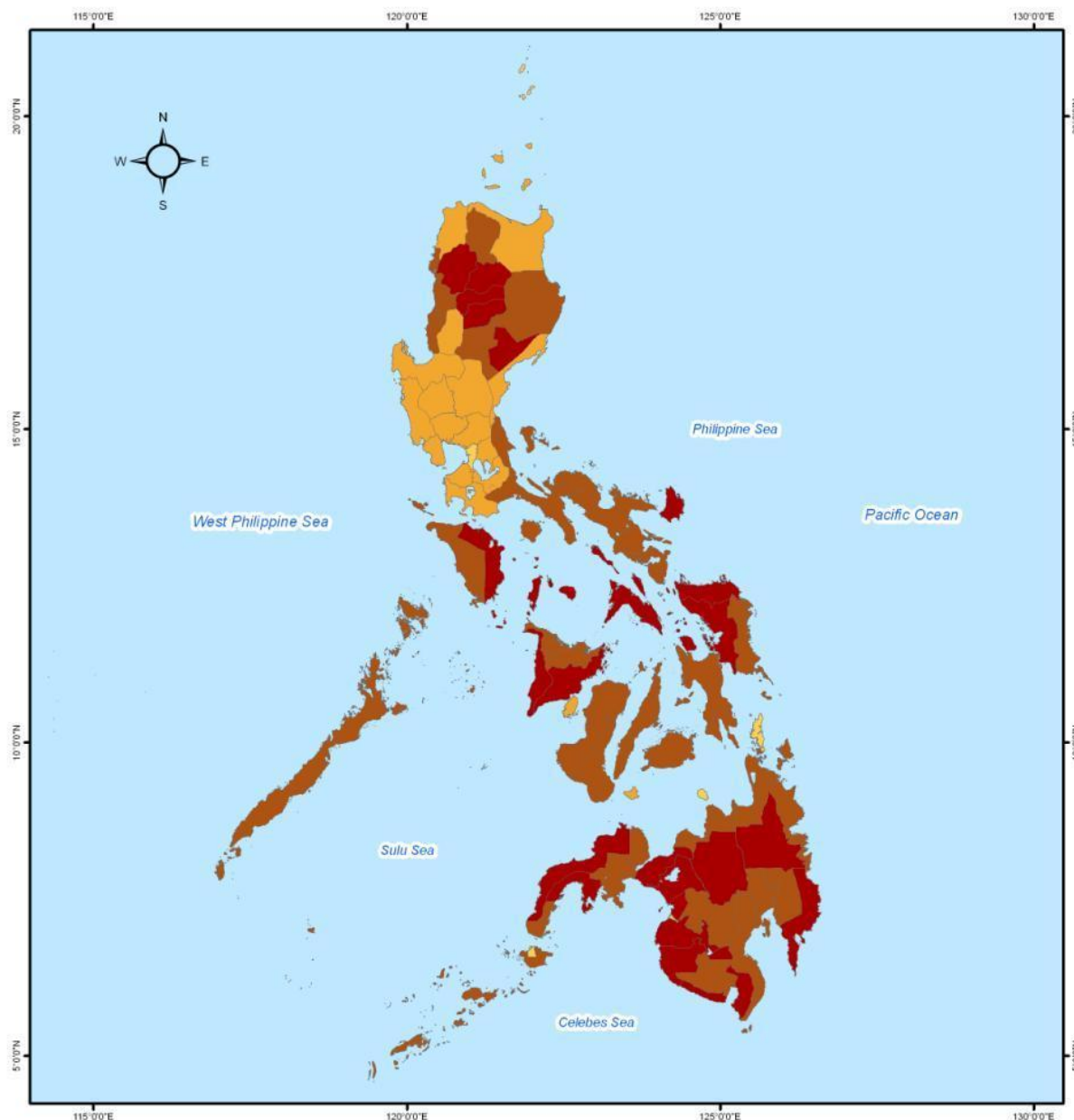
Less than 6
9.4 - 16.7
17.4 - 22.5
23.2 - 27.8
28.8 - 37.3

**Sources of Data:**  
WFP Philippines GIS Resources  
FNRI Philippine Nutrition Facts and Figures, 2008

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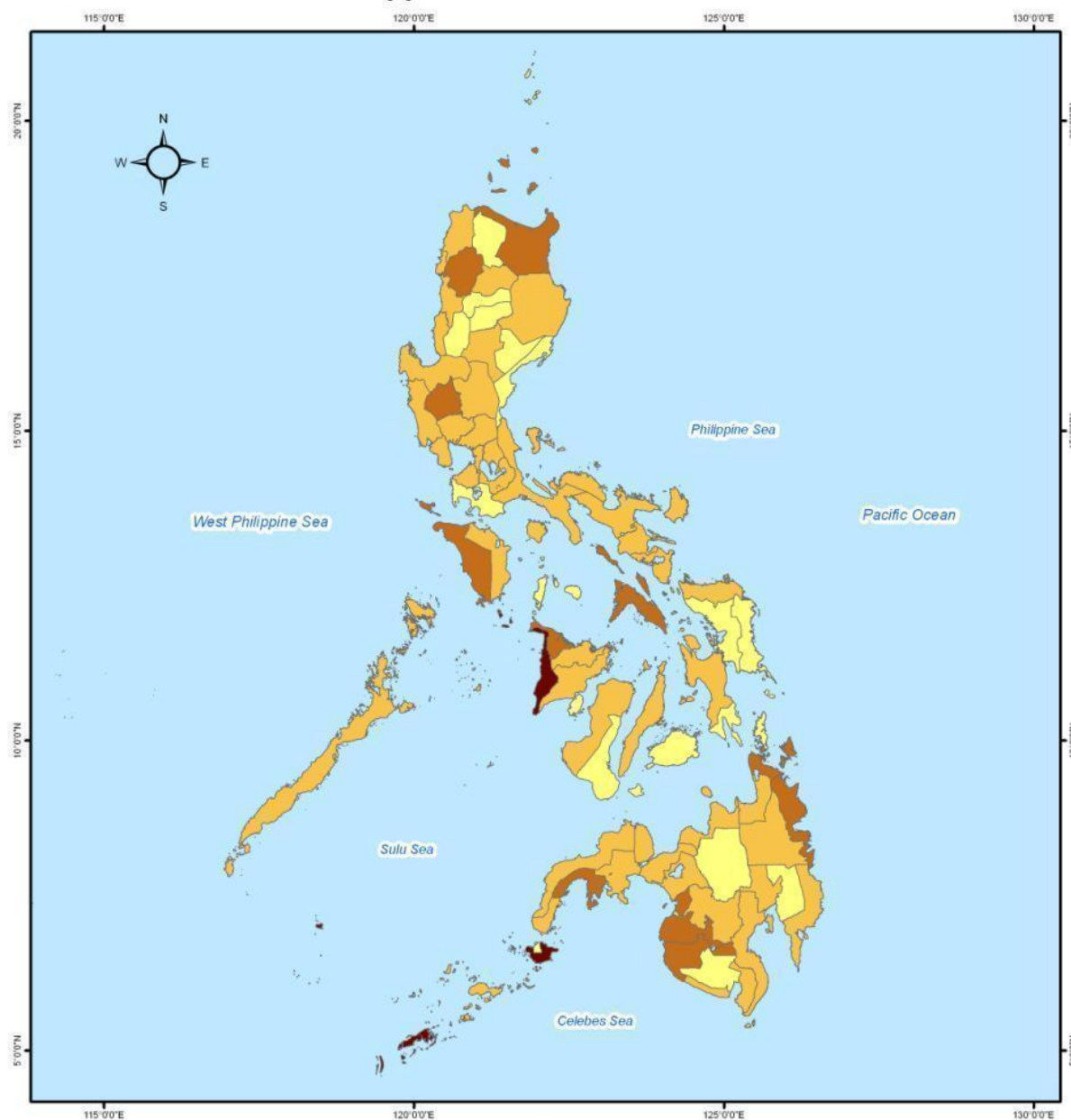
**Map 14. Percentage of Underheight Children Under 5 in the Philippines, 2008**



<p><b>WFP Philippines Food Security Atlas</b></p> <p>Map showing the distribution of undernourished (underheight) children 0-5 years old by province in 2008.</p>	<p><b>Legend</b></p> <p>Percentage of underheight children, 2008</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #fff9c4; border: 1px solid black; margin-right: 5px;"></span> Less than 20</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ffcc00; border: 1px solid black; margin-right: 5px;"></span> 20 - 29</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #c0504d; border: 1px solid black; margin-right: 5px;"></span> 30 - 39</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #800000; border: 1px solid black; margin-right: 5px;"></span> More than 40</li> </ul>	<p><b>Sources of Data:</b> WFP Philippines GIS Resources FNRI Philippine Nutrition Facts and Figures, 2008</p> <p><b>Disclaimer</b> Information contained in the map were derived from various sources. Users are advised to check the original sources of data to ascertain the authenticity of information. The boundaries, colors, denominations, and other information shown on this map do not imply any judgment on the part of WFP concerning the legal status of any territory or the endorsement or acceptance of such boundaries.</p>
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**Map 15. Percentage of Thin/Wasted Children Under 5 in the Philippines, 2008**



**WFP Philippines Food Security Atlas**

Map showing the distribution of undernourished (thin/wasted) children 0-5 years old by province in 2008.

**Legend**

Percentage of thin/wasted children, 2008

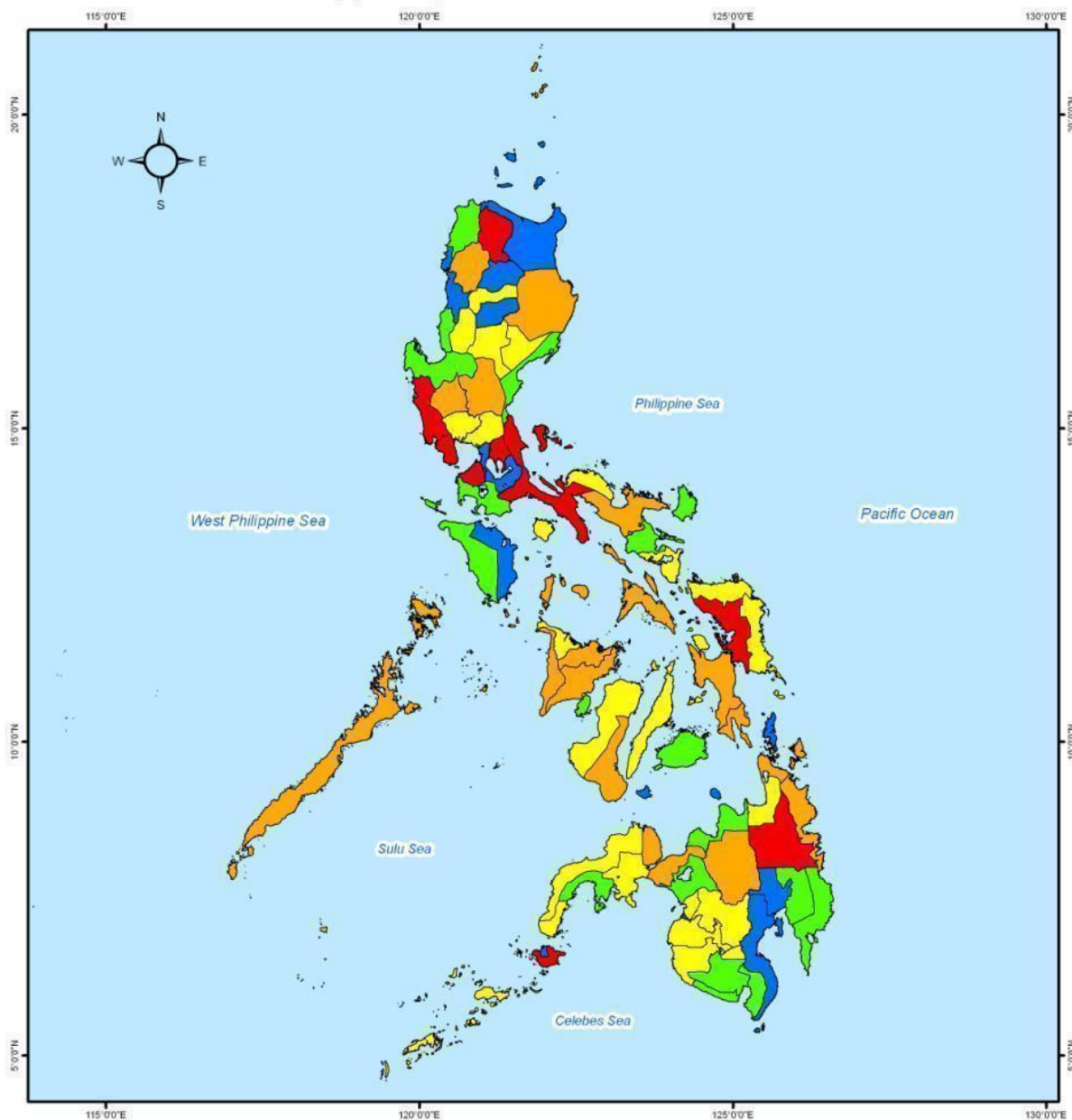
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span> Less than 5
<span style="display:inline-block; width:15px; height:15px; background-color:orange; border:1px solid black;"></span> 5-9
<span style="display:inline-block; width:15px; height:15px; background-color:darkorange; border:1px solid black;"></span> 10-14
<span style="display:inline-block; width:15px; height:15px; background-color:darkred; border:1px solid black;"></span> More than 14

**Sources of Data:**  
 WFP Philippines GIS Resources  
 FNRI Philippine Nutrition Facts and Figures, 2008

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**Map 16. Percentage of Children with Low-Birth Weight (LBW) in the Philippines, 2008**



**WFP Philippines Food Security Atlas**

Map showing the percentage of children with low-birth weight by province in 2008.

**Legend**

Percentage of children with LBW

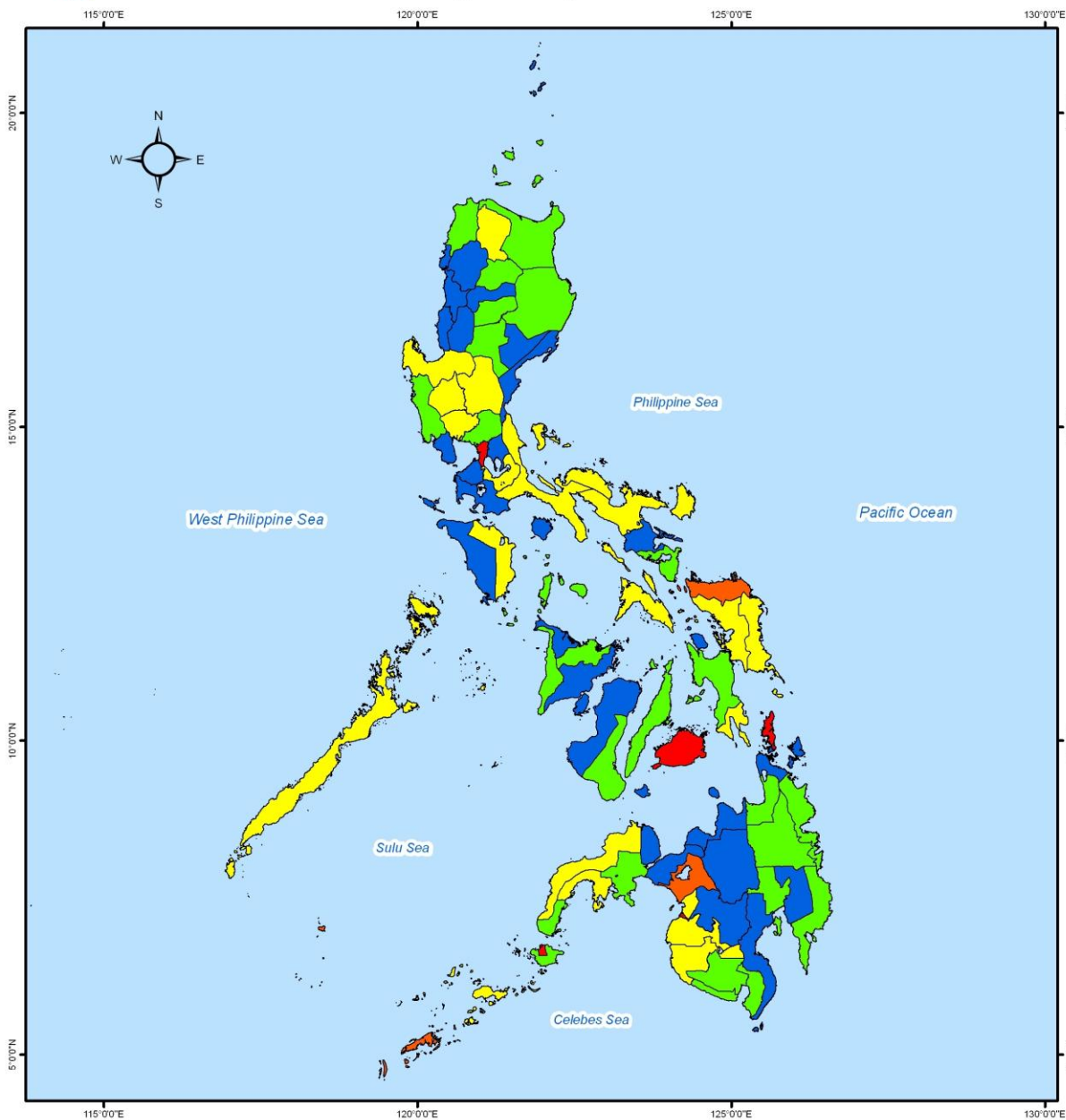
- Blue: Less than 2
- Green: 2.1 - 4.0
- Yellow: 4.3 - 6.9
- Orange: 7.1 - 11.6
- Red: 13.1 - 22.6

**Sources of Data:**  
 WFP Philippines GIS Resources  
 Philippine National Statistical Coordination Board  
 ([www.nscb.gov.ph](http://www.nscb.gov.ph))

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**Map 17. Percentage of Households with Access to Clean Drinking Water, 2008**



**WFP Philippines  
Food Security Atlas**

Map showing the percentage of households with access to clean drinking water by province in 2008.

**Legend**

Percentage of HHs with access to clean drinking water

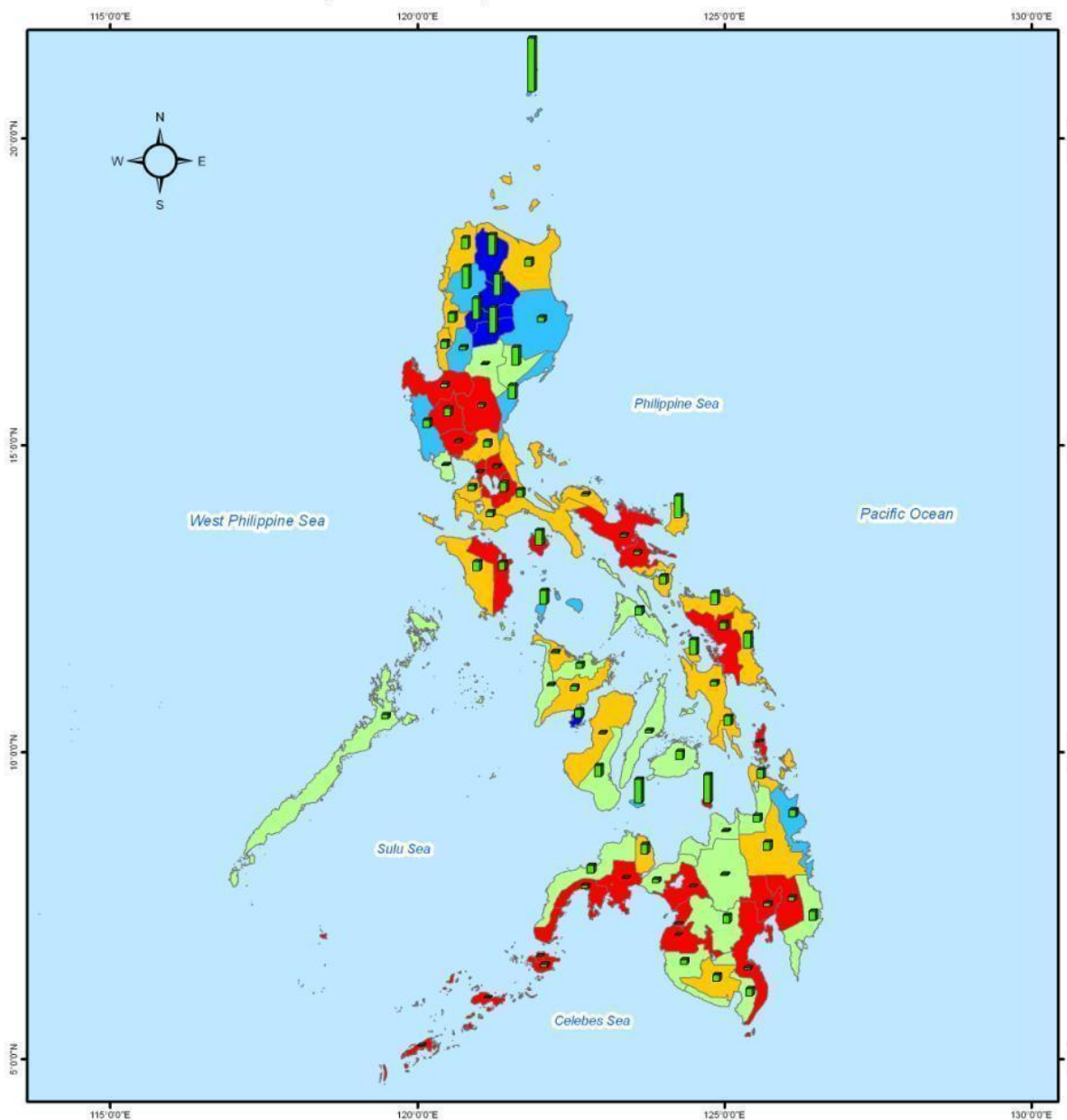
Red	Less than 39
Orange	39.7 - 50.6
Yellow	64.7 - 79.4
Light Green	80.6 - 91.2
Blue	92.3 - 100.0

**Sources of Data:**  
WFP Philippines GIS Resources  
Philippine National Statistical Coordination Board  
([www.nscb.gov.ph](http://www.nscb.gov.ph))

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Map 18. Number of Barangay Health Stations, Personnel and Expenditures, 2008



<p><b>WFP Philippines Food Security Atlas</b></p> <p>Map showing the number of barangay health stations, personnel and expenditure in 2008.</p>	<p><b>Legend</b></p> <p>Per capita health expenditure (in Php)</p> <p>590</p> <p>Number of brgy health station</p> <ul style="list-style-type: none"> <li>Less than 20</li> <li>20 - 26</li> <li>27 - 33</li> <li>34 - 40</li> <li>More than 40</li> </ul>	<p><b>Sources of Data:</b> WFP Philippines GIS Resources Philippine National Statistical Coordination Board (<a href="http://www.nscb.gov.ph">www.nscb.gov.ph</a>)</p> <p><b>Disclaimer</b> Information contained in the map were derived from various sources. Users are advised to check the original sources of data to ascertain the authenticity of information. The boundaries, colors, denominations, and other information shown on this map do not imply any judgment on the part of WFP concerning the legal status of any territory or the endorsement or acceptance of such boundaries.</p>
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## Chapter 5 - Vulnerability

### 5.1 Natural Disasters in the Philippines

The geographical location of the country makes it prone to disasters. The impact of natural disasters, together with the level of poverty in the country, jeopardizes food security. On the average, 20 tropical cyclones visit the country every year with the strongest typhoons hitting the country during the last quarter of the year.

Many of the destructive earthquakes that hit the Philippines have magnitudes of 5 or higher, resulting in death and destruction to properties.

#### Typhoons

Typhoons are tropical cyclones that have winds of at least 119 kilometers per hour (kph). On the average, 20 tropical cyclones visit the country every year. Of these, eight to nine typhoons make landfall (Virola, 2008).

Generally, typhoons passed through the areas of Luzon and Visayas, sidestepping the Mindanao region. Storm tracks generated from the Pacific Disaster Center (PDC) show that from 1999 to 2009, not a single typhoon passed through Mindanao. On the other hand, the Bicol region experienced the most number of typhoons from 1946 to 2006. The municipality of Virac in the province of Catanduanes was the most visited by strongest typhoons (Virola, 2008).

#### Volcanic Activity

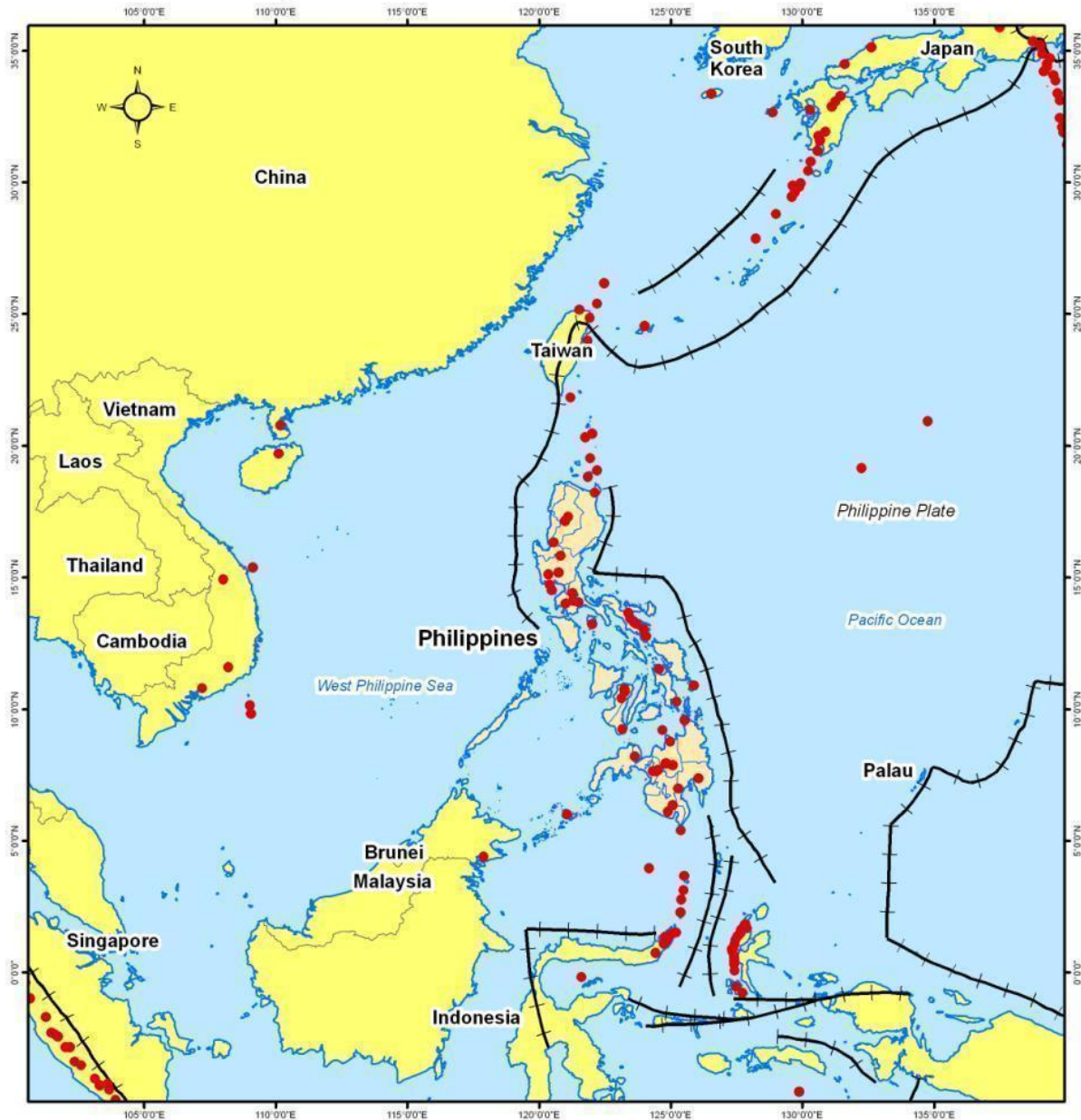
Volcanic activities include such events as eruption of volcanoes, flows of lahar and in some cases, earthquakes. In the Philippines, there is great potential for volcanic activity since the country has over 200 volcanoes, 22 of which are classified as active and 21 as potentially active.

#### Floods and Landslides

Provinces highly susceptible to flooding include: Pampanga, Nueva Ecija, Pangasinan, Tarlac, Maguindanao, Bulacan, Metro Manila, North Cotabato, Oriental Mindoro and Ilocos Norte. Areas highly prone to landslides are the provinces of Benguet, Mountain Province, Nueva Vizcaya, Kalinga-Apayao, Southern Leyte, Abra, Marinduque, Cebu, Catanduanes and Ifugao



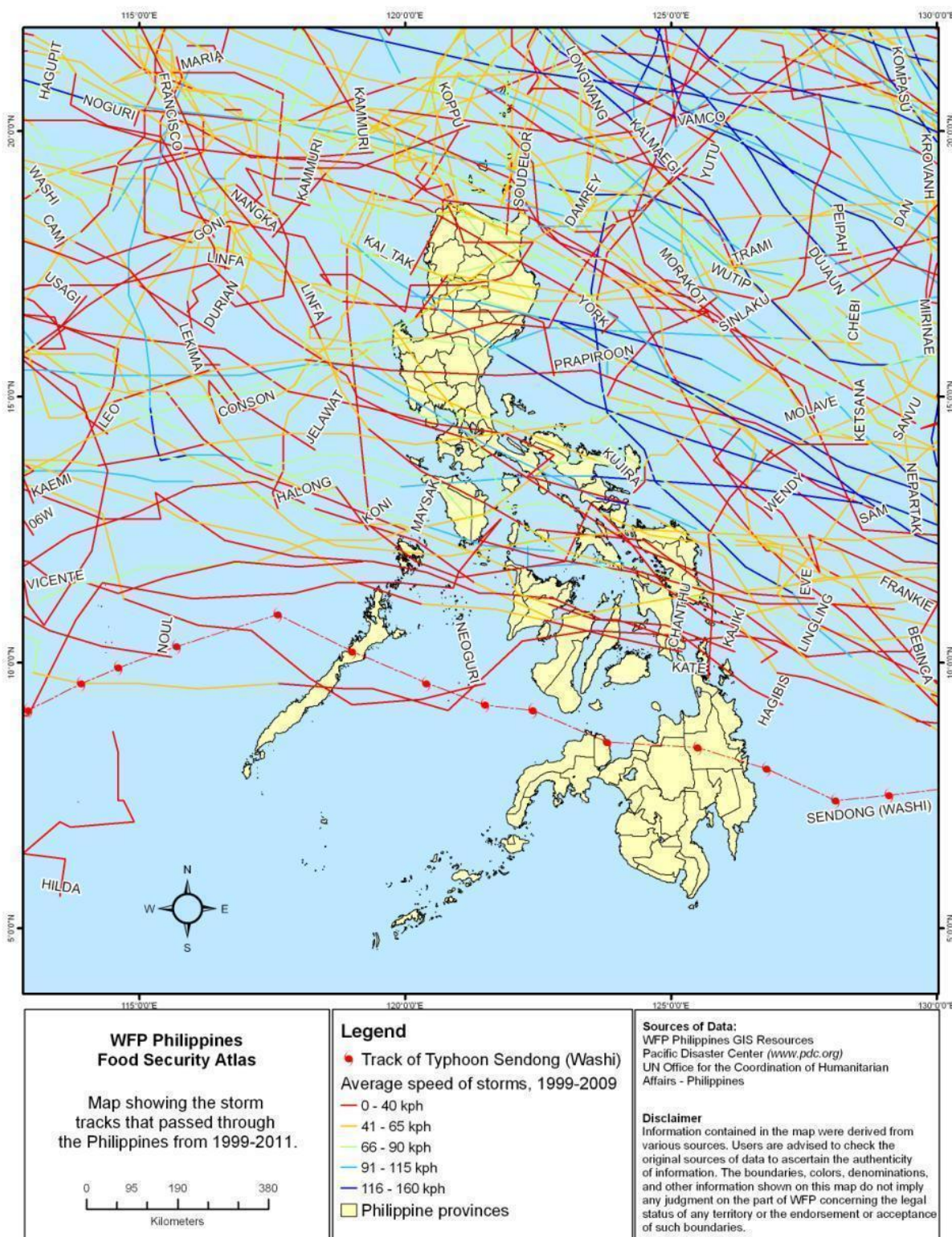
**Map 19. Location of the Philippines in the Pacific Ring of Fire**



<p><b>WFP Philippines Food Security Atlas</b></p> <p>Map showing the relative location of the Philippines in the Pacific Ring of Fire.</p>	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: red;">●</span> Volcano</li> <li> Plate boundary</li> <li> Coastline</li> <li> Philippines</li> <li> Other countries</li> </ul>	<p><b>Sources of Data:</b>                  WFP Philippines GIS Resources                  Pacific Disaster Center (<a href="http://www.pdc.org">www.pdc.org</a>)                  US Geological Survey (<a href="http://www.usgs.gov">www.usgs.gov</a>)                  Natural Earth (<a href="http://www.naturalearthdata.com">www.naturalearthdata.com</a>)</p> <p><b>Disclaimer</b>                  Information contained in the map were derived from various sources. Users are advised to check the original sources of data to ascertain the authenticity of information. The boundaries, colors, denominations, and other information shown on this map do not imply any judgment on the part of WFP concerning the legal status of any territory or the endorsement or acceptance of such boundaries.</p>
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Map 20. Storm Tracks in the Philippines, 1999-2011



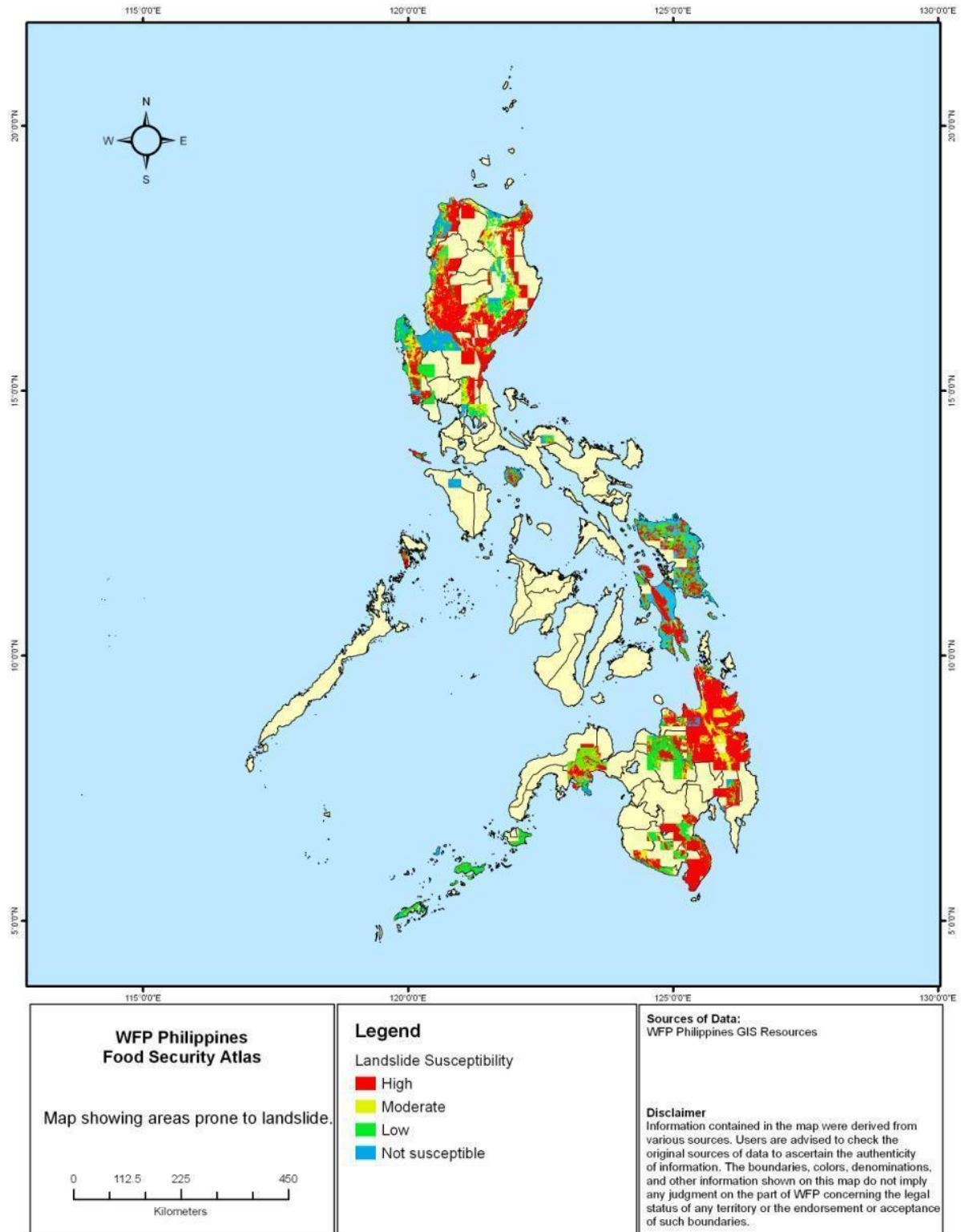


## Map 21. Location of Volcanoes in the Philippines





Map 22. Areas Prone to Landslide in the Philippines



### 5.2 Forest Cover

Available statistics on Philippine forest cover shows that the term generally refers to all forest vegetation including mangroves and plantations. In 2003, more than 7 million hectares were still covered with forest vegetations. Mangroves covered 247,362 hectares while plantation account for 329, 578 hectares. The total forest cover, therefore account for about 26 percent of the 30 million total land area of the country.

The amount of forest cover in the country is not enough to meet sustainable needs, including food security. What forests that we have in the country are inadequate to address the present needs of a sustainable landscape and this is exacerbated by climate change.

### 5.3 Impact of Climate Change to the Philippines

Natural disasters in the Philippines highlight the impact of climate change in the country. And the picture that is emerging is not bright. The number of typhoons coming into the country is increasing from an average of 27 typhoons (2000-2003) to 39 typhoons (2004-2007). The number of destructive typhoons is growing and occurring beyond the usual June to September seasons (Virola, 2008).

Likewise, storm tracks are changing. In December 16, 2011, tropical storm Sendong (international name Washi) passed through northern Mindanao, a region long-considered to be outside the typhoon-belt of the country. Still, there seem to be a growing unevenness of available water to different parts of the country. Some regions of the Philippines are now experiencing below normal rainfall.

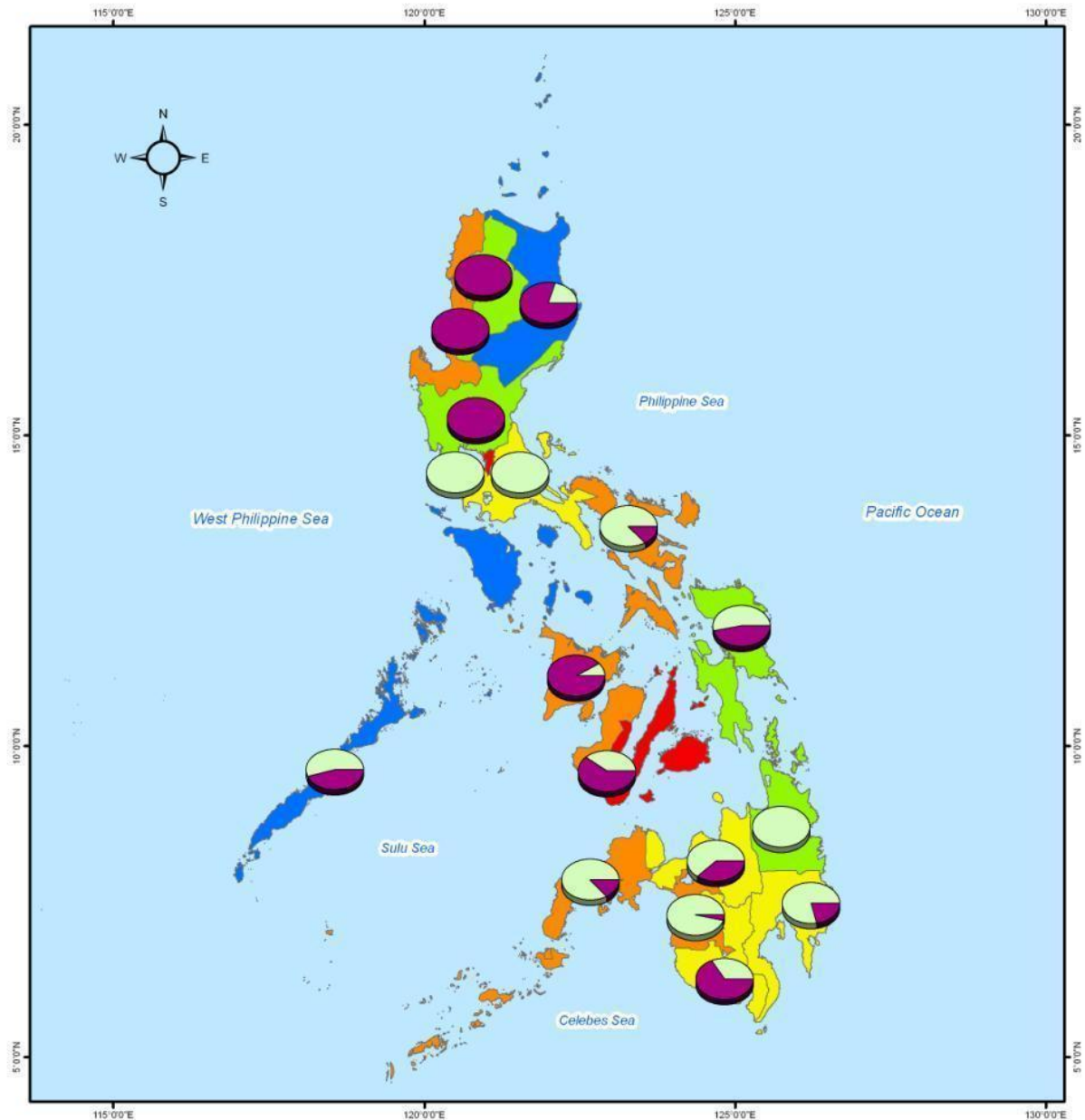
The unpredictability of these natural events is putting unnecessary stresses on the coping mechanisms of many regions in the country.

### 5.4 Insurgencies and Armed Conflict

The Philippines is home to one of Asia's longest running insurgencies. The government is battling armed groups associated with the Communist Party of the Philippines/New People's Army/National Democratic Front of the Philippines (CPP/NPA/NDFP), the Moro Islamic Liberation Front (MILF), and the Abu Sayyaf Group (ASG). The MILF is mostly located in Mindanao while the CPP/NPA/NDFP are found in many rural areas in the country. ASG on the other hand is a terrorist organization mostly found in the provinces of Sulu, Tawi-Tawi, Basilan and western Mindanao. In spite of the intermittent clashes between government forces and armed groups, the government is in the process of pursuing peace talks with MILF, CPP/NPA/NDFP and the CPP-NPA-breakaway group Rebolusyonaryong Partido ng Manggagawa Pilipinas-Revolutionary Proletarian Army-Alex Boncayao Brigade (RPMP-RPA-ABB). In the past, the Philippine government has forged peace agreements with the Moro National Liberation Front (MNLF) and the Cordillera People Liberation Army (CPLA). The lack of comprehensive resolution to the insurgencies and armed conflict in different parts of the country is badly affecting the food security of many regions in the country.



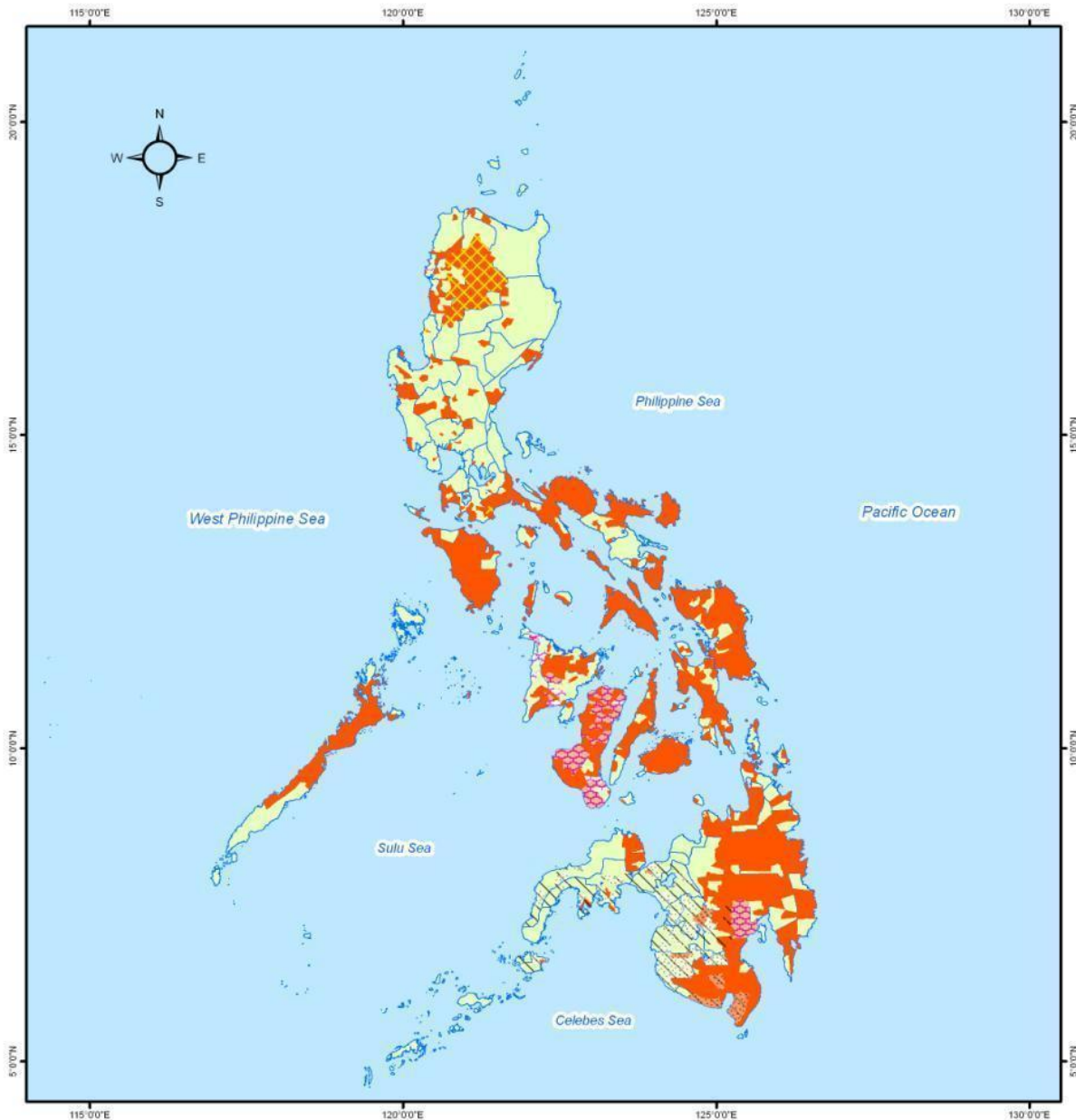
Map 23. Forest Cover in the Philippines, 2003



<p><b>WFP Philippines Food Security Atlas</b></p> <p>Map showing the country's total forest cover and areas covered by mangroves and plantations in hectares in 2003.</p>	<p><b>Legend</b></p> <p>Areas (in has.) covered by</p> <p>Total Forest cover, 2003 (in hectares)</p> <ul style="list-style-type: none"> <li>2,820 - 74,869</li> <li>156,476 - 264,514</li> <li>289,673 - 421,035</li> <li>519,848 - 672,320</li> <li>1,149,845 - 1,195,144</li> </ul>	<p><b>Sources of Data:</b> WFP Philippines GIS Resources Food and Agriculture Organization of the United Nations (<a href="http://www.fao.org">www.fao.org</a>)</p> <p><b>Disclaimer</b> Information contained in the map were derived from various sources. Users are advised to check the original sources of data to ascertain the authenticity of information. The boundaries, colors, denominations, and other information shown on this map do not imply any judgment on the part of WFP concerning the legal status of any territory or the endorsement or acceptance of such boundaries.</p>
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Map 24. Conflict Affected Areas in the Philippines



**WFP Philippines Food Security Atlas**

Map showing conflict areas due to reported presence of armed groups.

**Legend**

- CPLA areas
- RPA areas
- MNLF areas
- MILF areas
- CPP-NPA-NDFP areas
- Areas without armed groups

**Sources of Data:**  
WFP Philippines GIS Resources

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## Chapter 6 - Priority Areas for Action

### 6.1 Malnutrition and Poverty

It has been widely accepted that malnutrition is caused by household food insecurity and is a consequence of poverty. Broadening our view on the link between malnutrition and poverty would lead our focus to the fact that malnutrition is a contributory factor to poverty and underdevelopment. With the role of food and nutrition security in the alleviation of poverty greatly emphasized, addressing these issues would require concerted and simultaneous actions instead of dealing with these problems separately.

Using the latest National Nutrition Surveys results on underweight, stunting and wasting among children 0-5-year old overlaid with geographic and regional level poverty incidence shows that the highest rates for all three indexes are found in regions with the highest poverty incidence. Poverty incidence is defined in the country as the proportion of families or population with per capita income less than the per capita poverty threshold to the total number of families or population.

The situation in Bicol Region, ARMM and Eastern Visayas, on the basis of weight-for-age index and poverty incidence, is the worst when compared with other regions of the country. Low height-for-age or stunting, used as a measure of chronic malnutrition, when combined with figures on poverty incidence shows that the top three most affected regions are ARMM, Eastern Visayas, and Bicol Region. Serious magnitude of wasting/thinness when analyzed against poverty incidence was observed in ARMM, Northern Mindanao, and Bicol Region.

Clearly, malnutrition and poverty in these regions, particularly in ARMM, Bicol Region and Eastern Visayas, indicates that focus and new approaches are necessary to examine other underlying factors and address the vicious cycle between malnutrition and poverty.

### 6.2 Conflict and Poverty

Armed-conflict and insurgencies has contributed to the instability and relatively higher incidence of poverty in certain regions of the country. Historical accounts show that the conflict between the government and groups such as the Communist Party of the Philippines/New People's Army/National Democratic Front of the Philippines (CPP/NPA/NDFP) and Moro Islamic Liberation Front (MILF) have lasted for decades. The presence of MILF particularly in ARMM, Northern Mindanao and Bicol Region has placed these regions at a disadvantage in

terms putting poverty at a halt and ensuring that the families have better access to good source of livelihood and other basic services.

The link between poverty was critically examined by Goodhand (2001). The impact of conflict is more severe than other external shocks because of deliberate destruction of livelihood and it may also reverse pre-existing power relations. Displaced populations are found to be living under the most difficult form of socioeconomic exclusion and deprivation (Goodhand, 2001). Most of the people in affected areas often struggle to find work, are less likely to work in the post-conflict period and exhibit lower productivity levels than those that stayed behind. This was observed among the families in Mindanao who were witnesses to the fighting and negotiations to over four major cycles of conflict since 1997.

### 6.3 Floods and Poverty

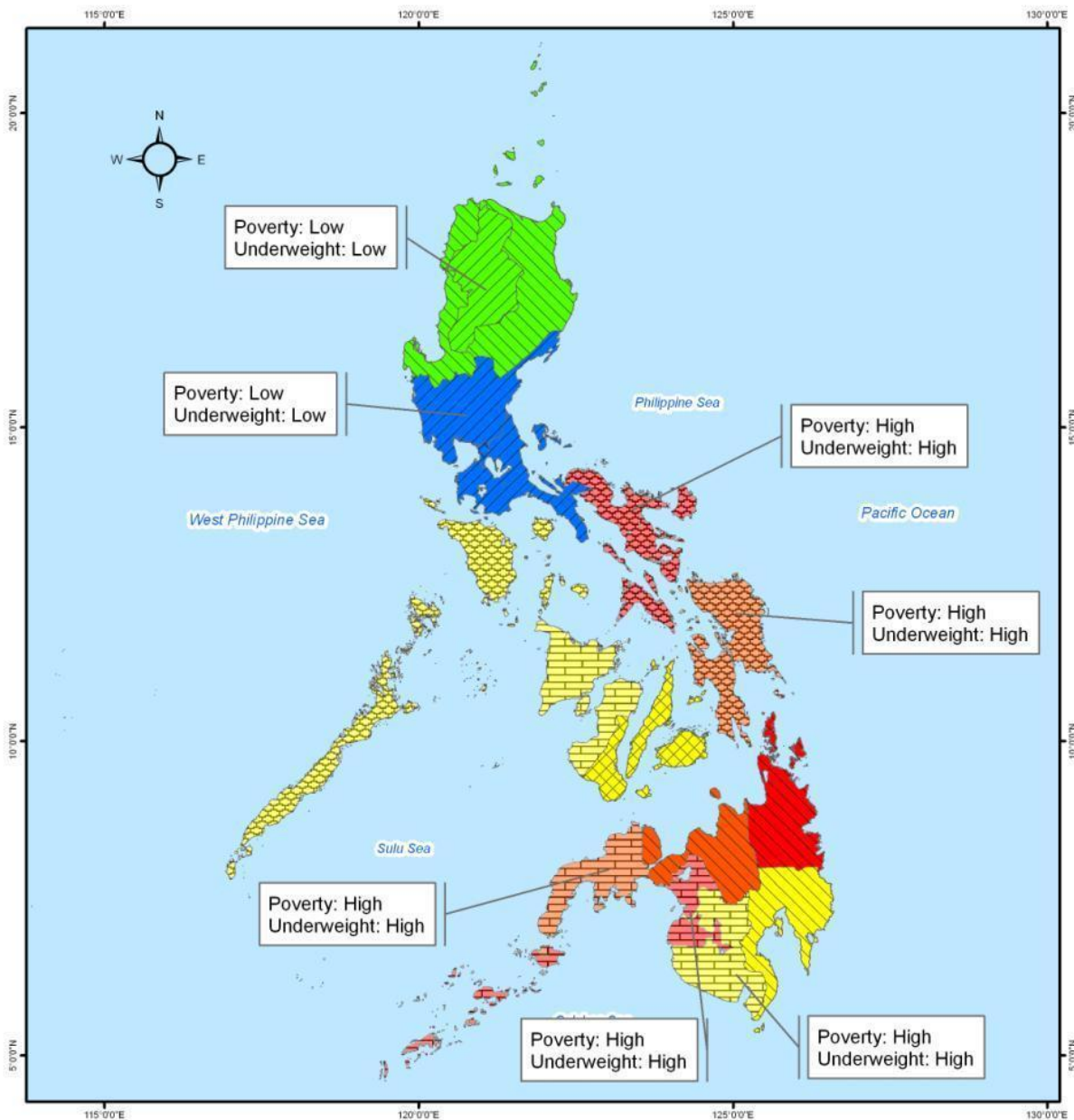
The Philippines is considered one of the most vulnerable places in the world. Due to its geographical location the country is prone to many disasters. The combination of the country's geography, population density and poverty incidence makes the population vulnerable to floods.

While normal flooding is beneficial for agriculture and fisheries. The short-term negative effects of catastrophic floods in the country are strong in the immediate aftermath of floods. In 2011, typhoon Washi (Sendong) brought damage to properties which amounted to 1.38 billion and a record high of 1,257 casualties in Visayas (Regions VI, VII) and Mindanao (Regions IX, X, XI, CARAGA and ARMM).

The government started to focus its attention in linking flood risk management with poverty reduction and urban and regional planning. Areas identified by the government as highly susceptible to flooding are the NCR, Central Luzon, Ilocos Region, ARMM and MIMAROPA. Households in these areas are also exposed to extremely high vulnerability. Targeting households in these regions may mitigate future risks to flooding.



## Map 25. Philippine Poverty Incidence with Underweight



**WFP Philippines Food Security Atlas**

Map showing the proportion of underweight in areas with poverty incidence by region.

**Legend**

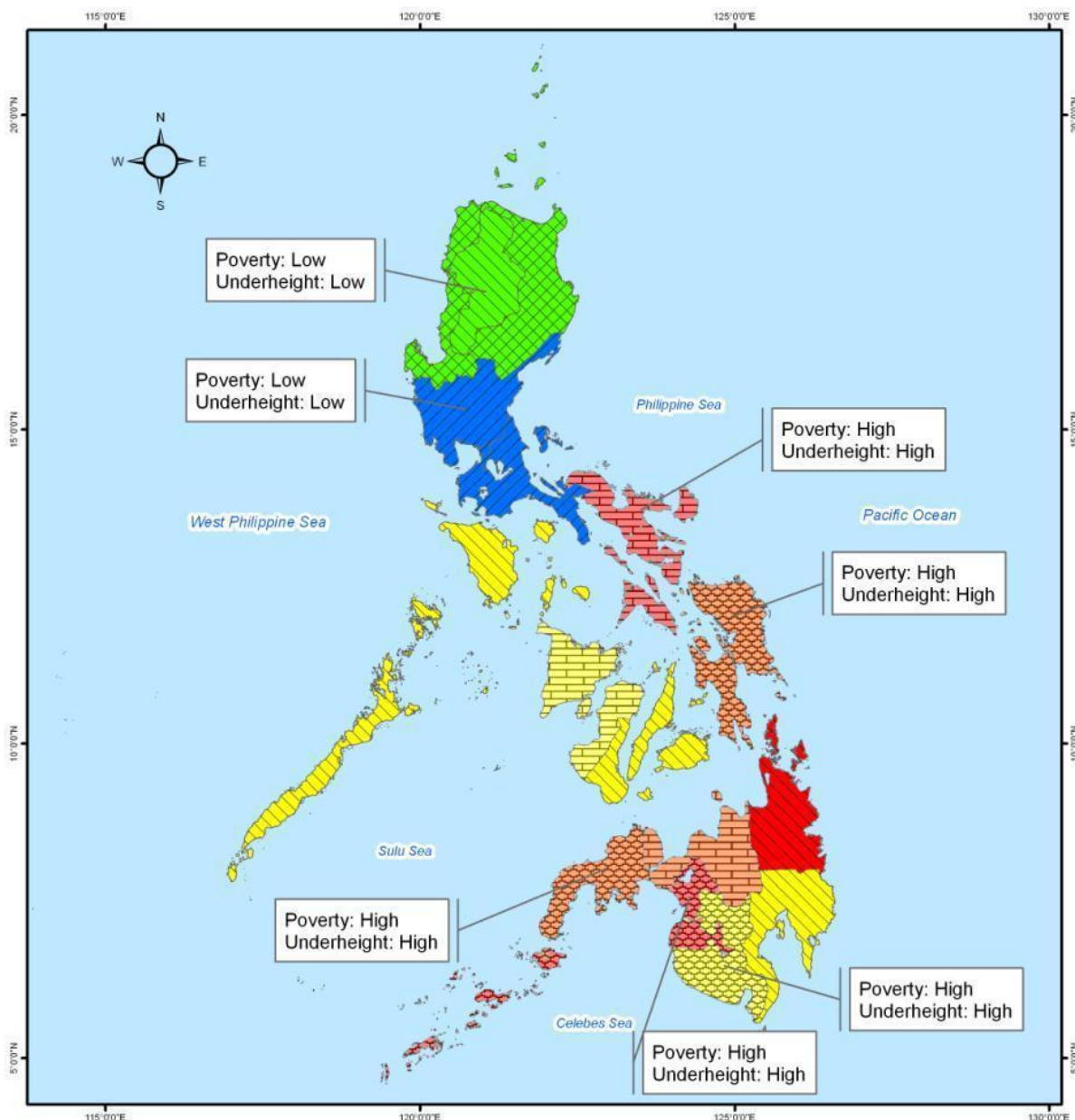
Underweight	Poverty incidence
14.5 - 16.5	4.0 - 15.3
17.4 - 19.4	18.8 - 23.3
20.3 - 22.7	31.2 - 35.7
24.4 - 25.4	39.6 - 43.1
26.4 - 26.6	45.1 - 47.8

**Sources of Data:**  
 WFP Philippines GIS Resources  
 Philippine National Statistical Coordination Board ([www.nscb.gov.ph](http://www.nscb.gov.ph))  
 Food and Nutrition Research Institute

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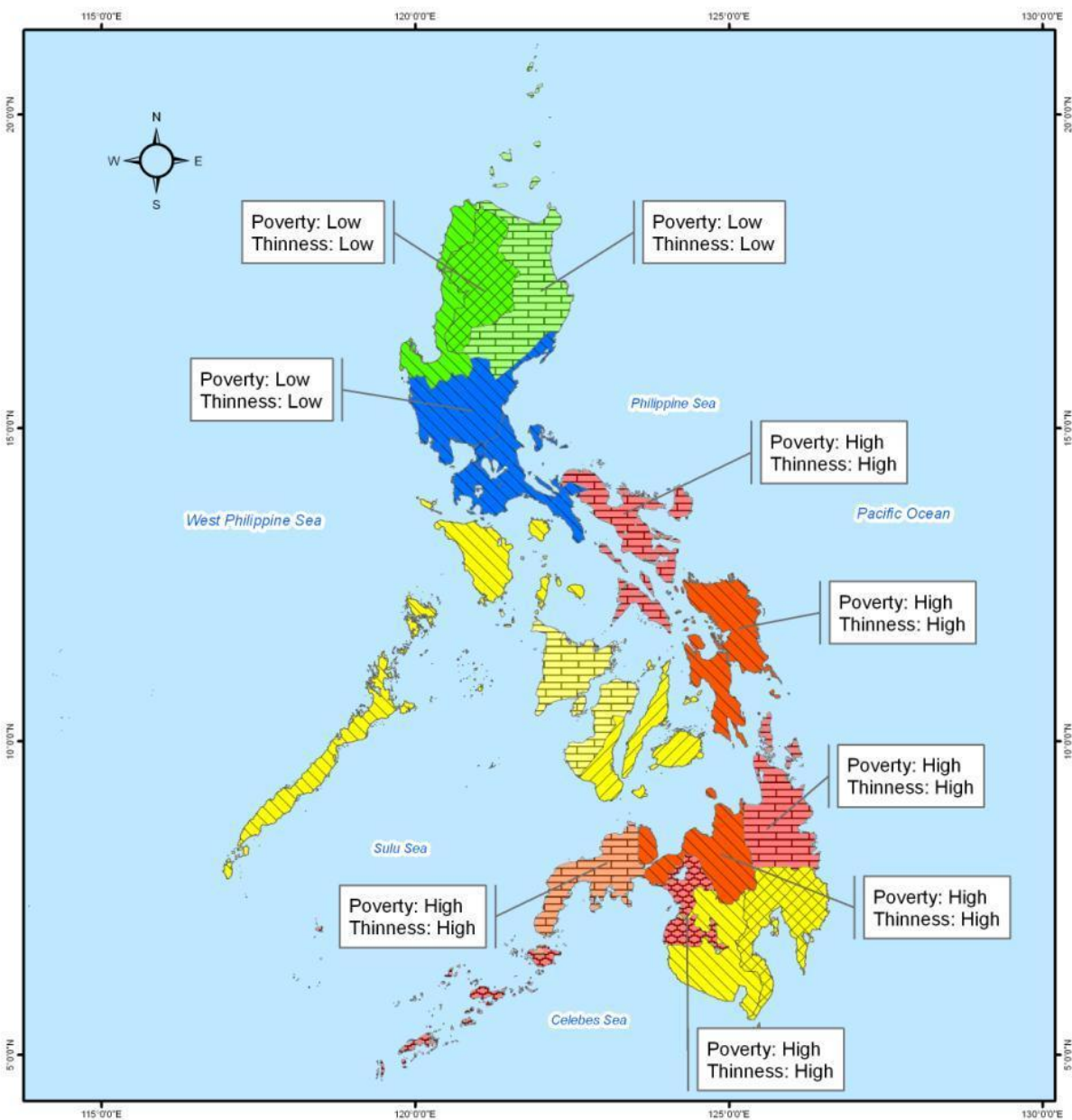
## Map 26. Philippine Poverty Incidence with Underheight



<p><b>WFP Philippines Food Security Atlas</b></p> <p>Map showing the proportion of underheight in areas with poverty incidence by region.</p>	<p><b>Legend</b></p> <table border="1"> <thead> <tr> <th>Underheight</th> <th>Poverty incidence</th> </tr> </thead> <tbody> <tr> <td>Diagonal lines (top-left to bottom-right)</td> <td>4.0 - 15.3</td> </tr> <tr> <td>Diagonal lines (bottom-left to top-right)</td> <td>18.8 - 23.3</td> </tr> <tr> <td>Horizontal lines</td> <td>31.2 - 35.7</td> </tr> <tr> <td>Vertical lines</td> <td>39.6 - 43.1</td> </tr> <tr> <td>Grid pattern</td> <td>45.1 - 47.8</td> </tr> </tbody> </table>	Underheight	Poverty incidence	Diagonal lines (top-left to bottom-right)	4.0 - 15.3	Diagonal lines (bottom-left to top-right)	18.8 - 23.3	Horizontal lines	31.2 - 35.7	Vertical lines	39.6 - 43.1	Grid pattern	45.1 - 47.8	<p><b>Sources of Data:</b>                  WFP Philippines GIS Resources                  Philippine National Statistical Coordination Board (<a href="http://www.nscb.gov.ph">www.nscb.gov.ph</a>)                  Food and Nutrition Research Institute</p> <p><b>Disclaimer</b>                  Information contained in the map were derived from various sources. Users are advised to check the original sources of data to ascertain the authenticity of information. The boundaries, colors, denominations, and other information shown on this map do not imply any judgment on the part of WFP concerning the legal status of any territory or the endorsement or acceptance of such boundaries.</p>
Underheight	Poverty incidence													
Diagonal lines (top-left to bottom-right)	4.0 - 15.3													
Diagonal lines (bottom-left to top-right)	18.8 - 23.3													
Horizontal lines	31.2 - 35.7													
Vertical lines	39.6 - 43.1													
Grid pattern	45.1 - 47.8													



## Map 27. Philippine Poverty Incidence with Thinness



**WFP Philippines  
Food Security Atlas**

Map showing the proportion of thinness in areas with poverty incidence by region.

**Legend**

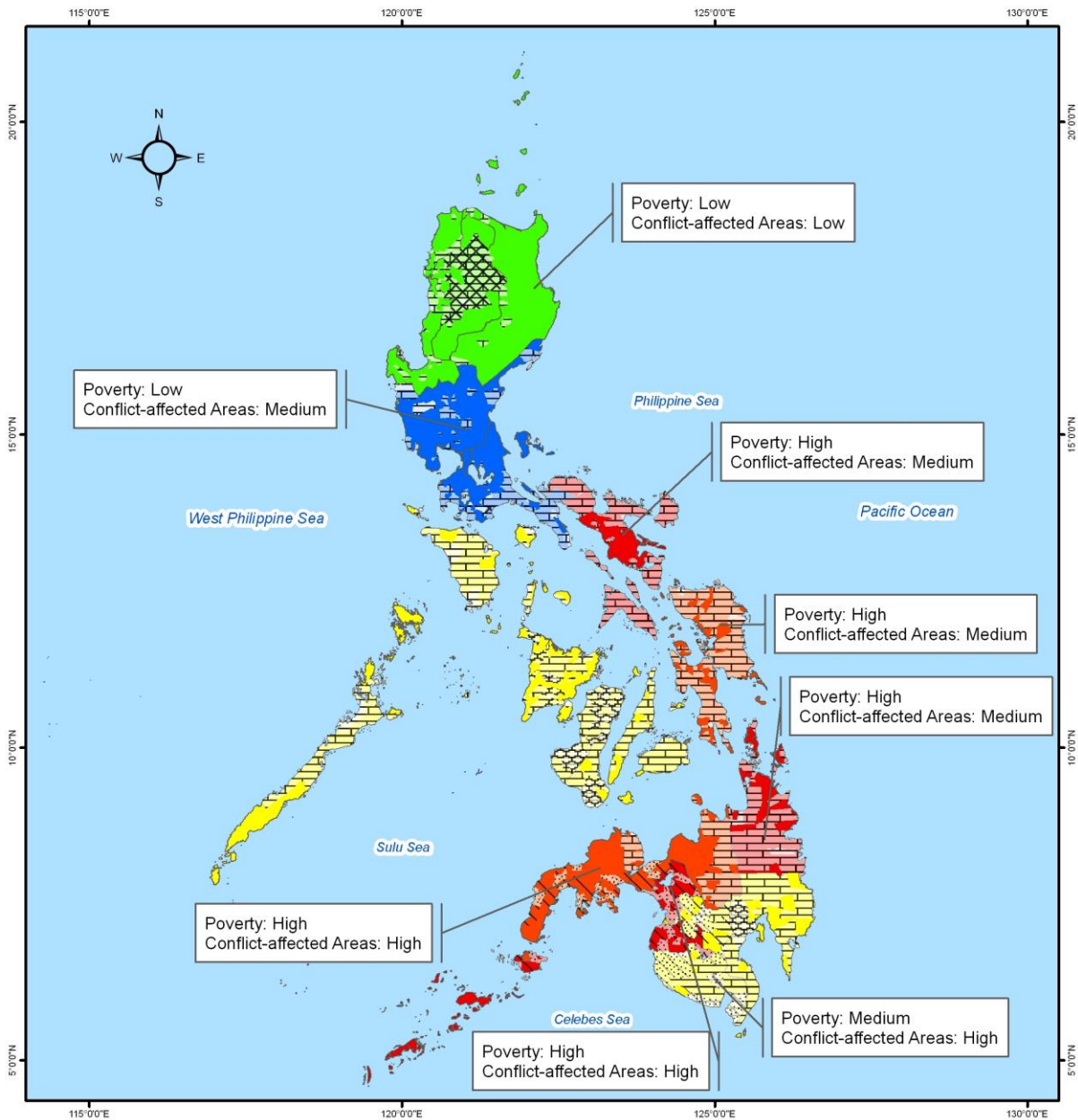
Thinness	Poverty incidence
4.6	4.0 - 15.3
5.7 - 6.2	18.8 - 23.3
6.5 - 7.1	31.2 - 35.7
7.8 - 8.5	39.6 - 43.1
10.3	45.1 - 47.8

**Sources of Data:**  
 WFP Philippines GIS Resources  
 Philippine National Statistical Coordination Board ([www.nscb.gov.ph](http://www.nscb.gov.ph))  
 Food and Nutrition Research Institute

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Map 28. Conflict Affected Areas with Poverty Incidence



**WFP Philippines  
Food Security Atlas**

Map showing conflict areas with poverty incidence.

**Legend**

- CPLA areas
- RPA areas
- MNLF areas
- MILF areas
- CPP-NPA-NDFP areas

Poverty incidence, 2011

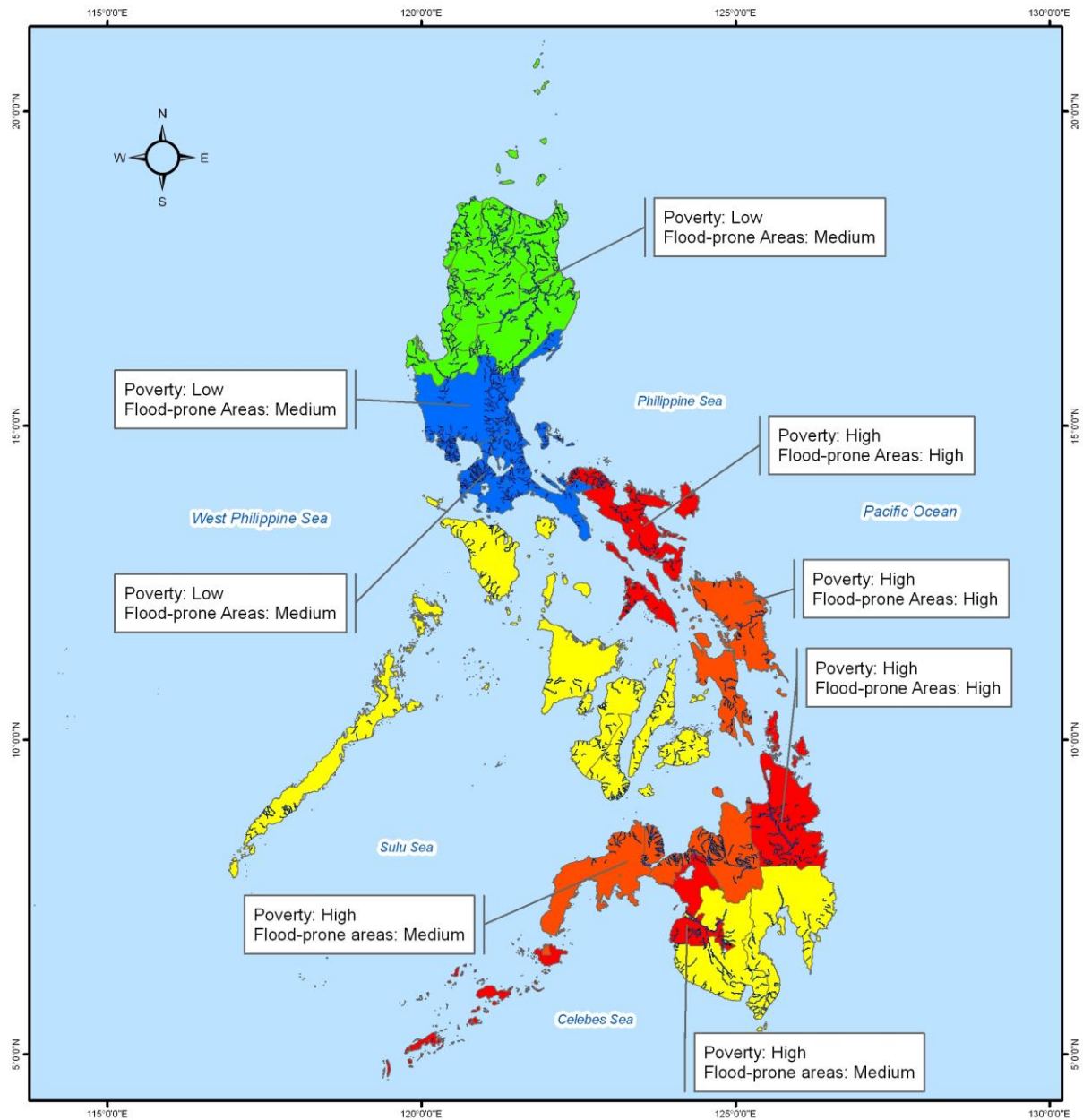
- 4 - 15.3
- 18.8 - 23.3
- 31.2 - 35.7
- 39.6 - 43.1
- 45.1 - 47.8

**Sources of Data:**  
WFP Philippines GIS Resources  
Philippine National Statistical Coordination Board ([www.nscb.gov.ph](http://www.nscb.gov.ph))

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Map 29. Flood-Prone Areas with Poverty Incidence

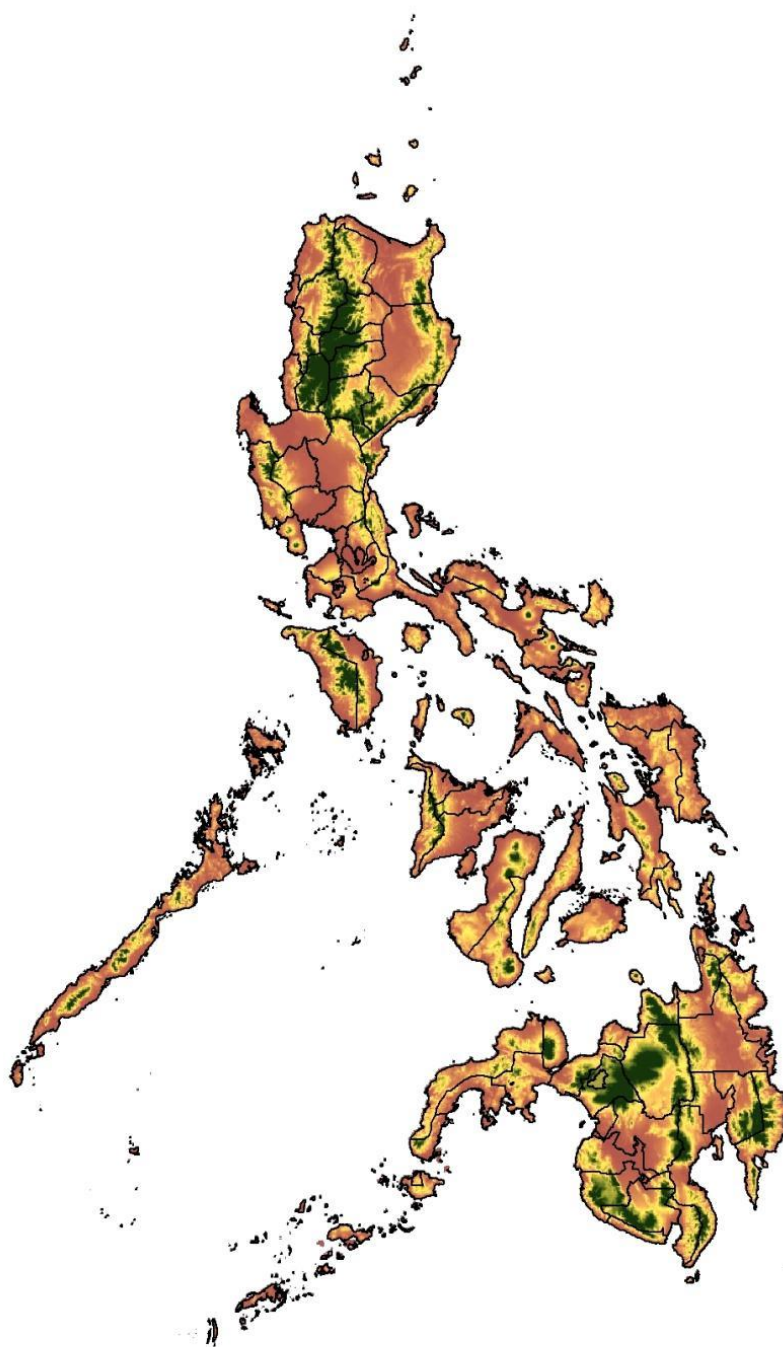


<p><b>WFP Philippines Food Security Atlas</b></p> <p>Map showing flood-prone areas with poverty incidence by region.</p>	<p><b>Legend</b></p> <p>Poverty incidence</p> <ul style="list-style-type: none"> <li>4.0 - 15.3</li> <li>18.8 - 23.3</li> <li>31.2 - 35.7</li> <li>39.6 - 43.1</li> <li>45.1 - 47.8</li> </ul> <p>— Philippine rivers</p> <p> Potential flooded areas, 1m buffer</p>	<p><b>Sources of Data:</b> WFP Philippines GIS Resources</p> <p><b>Disclaimer</b> Information contained in the map were derived from various sources. Users are advised to check the original sources of data to ascertain the authenticity of information. The boundaries, colors, denominations, and other information shown on this map do not imply any judgment on the part of WFP concerning the legal status of any territory or the endorsement or acceptance of such boundaries.</p>
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**World Food Programme - Philippines**

**5<sup>th</sup> Floor, G. C. Corporate Plaza**

**150 Legazpi Street, Legaspi Village, Makati City, 1229**

**Tel: + 63-2-7502561**

**Fax: + 63-2-7502562**

**e-mail: [wfp.philippines@wfp.org](mailto:wfp.philippines@wfp.org)**

**Website: <http://www.wfp.org/countries/philippines>**