FOODSECURE

FOR POLICIES THAT MATTER

Region report for: South Asia

Countries included in this report:

Afghanistan
Bangladesh
Bhutan
British Indian Ocean Territory
India
Maldives
Nepal
Pakistan
Sri Lanka

FOODSECURE
FOR POLICIES THAT MATTER

Country report for: Afghanistan

Introduction

The FOODSECURE project aims to design effective and sustainable strategies for assessing and addressing the short- and long-term challenges of food and nutrition security (FNS). The project will provide a variety of analytical tools to experiment, analyse, and coordinate policies to address tight and volatile food markets. More specifically, FOODSECURE aims to:

-Better understand the causes of hunger and malnutrition and the determinants of global food and nutrition security.
-To improve the ability of decision makers to foresee and respond to future food and nutrition security crises.
-Provide guidance to stakeholders on technological and institutional change and policy strategies to improve global FNS.

More information about the FOODSECURE project is available at http://www.foodsecure.eu/

Typology

A categorization of countries based on their characteristics can help policy makers in developing the right strategy, as it facilitates the interpretation and drawing of suitable conclusions from case studies and successful policies in other countries. In this FOODSECURE project, the typology will help calibrating models and interpreting results at national levels, as well as guide the selection of case studies by project partners.

The typology is developed based on the countries' food or nutrition security profiles, as well as on their agricultural, economic, (agricultural) innovation systems, social and political profiles:

- The obesity index (based on the prevelance of obesity among adult women) is very low
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is very low
- The agricultural potential (based on precipitation, growing season, soil fertility and water availability) is low
- The health infrastructure (based on % with access to (1) improved water sources and (2) proper sanitation)) is very low
- The political index (based on level of democratization, efficiency/quality of the government and political stability) is very low

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for Afghanistan

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	17.25	4
	Irrigation gap	2.42	2
	Arable land per capita	0.31	4
Efficiency	Cereals yield	0.03	3
FNS Risk	Stunting		
	Underweight		
	Wasting		
	Volatility		
	Social protection		
	GDP per capita		

The scores in the table above result in the following problems for Afghanistan

- None of the categorized FNS profiles

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for Afghanistan

- The country is strengthening its risk management and institutions (based on FAPDA 2014)
- There is public storage in the country (FAPDA 2014)
- The country has not changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have not been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

Agricultural and food imports play a particular key role in terms of food security in low income countries. Indeed, dependency on imports for food may raise a problem for food security in particular in the case of sudden price increase which put up national food bill. The national state of food availability combining food imports and domestic food production thus constitutes some crucial information. The Bonilla Index, which is the ratio of national food import expenditure to the total value of exports, is a useful indicator of national access to the world food supply. This is a consistent indicator of the national capacity to finance food imports from exports. In this regard, it is an interesting indicator of the vulnerability of food security to trade in developing countries, especially for net food importing countries. The Bonilla Index in the period 1995-2010 for country name ranged between BImin (BN) and BImax (BO), with an average of BIave (BP). In 2008, the height of the food crisis, the BI was BI2008 (BQ). More information can be found in FOODSECURE Working Paper 18.

The Bonilla Index is influenced by the Nominal rate of assistance for importable food products (NRAm). If NRAm increases (resp. decreases), for example due to higher (resp. lower) food import tariffs or domestic food production subsidies, the BI automatically increases (resp. decreases) due to the price rise for imported food, with a negative (resp. positive) effect on national food security. In country name, the NRAm ranged between NRAmin and NRAmax (mean: NRAmean), and was NRA2008 in 2008.

Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

Prices & productivity

The FoodSecure project has looked at price-related food insecurity by looking at the commodity prices. This provides an alternative to looking at the national food price indices which might not be representative for poor consumers. A typology has been created which includes: (1) general price instability; (2) seasonal price instability; and (3) price uncertainty. This typology provides an indication of the potential of policy instruments to reduce price volatility. FOODSECURE Technical paper no. 5 by Korner and Kalkuhl (2015) provides more information about the data and methodology which are used to derive these results and can be found here.

The typology with respect to price related food insecurity is based on three indicators. First, national food price volatility measured as the extent of commodity price fluctuations in domestic food markets. Second, price transmission from international into domestic food markets which captures the risk of importing volatility from international food prices. Third, trade status defining whether a country is importer, exporter, or trade-switcher. This relates to a country's vulnerability to international price surges.

National food price volatility

- The general food price volatility in the country is medium
- The irregular volatility (price uncertainty) in the country is low
- The seasonal range (percentage deviation between highest and lowest price of the seasonality obtained from decomposition analysis) is low

Price transmission

- The maximum transmission elasticity (over all commodity prices) is low
- The mean quintile of transmission elasticity quintiles over commodities is 3.33

Health and Nutrition

The definition of food security takes into account both the individual and the global level of food security and recognizes the importance of the nutritional value of the diet. It confirms that food security is a multidimensional issue that goes beyond the simple availability of food and requires access to sufficient, safe and nutritious food. The accepted definition is: ‘Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO 1998). The health and nutrition aspect includes indicators such as daily calorie intake (with a separation for consumption of fats and proteins – figures below).

Research and development

Innovations play a key role in enhancing human welfare, reducing poverty, and promoting economic growth in developing countries. In the agricultural sector, innovation leads to improved engineering and communication, which supports food production, develops biotechnology, and sets new platforms and institutional arrangements for farmers.

Country report for: Bangladesh

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- The food security index (based on average daily calorie intake, share of animal proteins, and calorie deficit) is very low
- The nutrition security index (based on % undernourished , % of women suffering from anemia and under-five mortality rates) is medium
- The obesity index (based on the prevelance of obesity among adult women) is very low
- The economic performance (based on per capita GDB, the GINI coefficient, and the women's economic opportunity index) is very low
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is very low
- The agricultural potential (based on precipitation, growing season, soil fertility and water availability) is very high
- The health infrastructure (based on % with access to (1) improved water sources and (2) proper sanitation)) is low
- The political index (based on level of democratization, efficiency/quality of the government and political stability) is low
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is very low

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for Bangladesh

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	13.63	3
	Irrigation gap	1.66	1
	Arable land per capita	0.06	1
Efficiency	Cereals yield	0.05	4
FNS Risk	Stunting	47.7	5
	Underweight	40.16	5
	Wasting	13.51	5
	Volatility	0.01	3
	Social protection	3.5	3
	GDP per capita	1235.06	1

The scores in the table above result in the following problems for Bangladesh

- Chronic malnutrition
- Acute malnutrition
- Hunger without volatility

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for Bangladesh

- The country is not strengthening its risk management and institutions (based on FAPDA 2014)
- There is public storage in the country (FAPDA 2014)
- The country has changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

Agricultural and food imports play a particular key role in terms of food security in low income countries. Indeed, dependency on imports for food may raise a problem for food security in particular in the case of sudden price increase which put up national food bill. The national state of food availability combining food imports and domestic food production thus constitutes some crucial information. The Bonilla Index, which is the ratio of national food import expenditure to the total value of exports, is a useful indicator of national access to the world food supply. This is a consistent indicator of the national capacity to finance food imports from exports. In this regard, it is an interesting indicator of the vulnerability of food security to trade in developing countries, especially for net food importing countries. The Bonilla Index in the period 1995-2010 for country name ranged between BImin (BN) and BImax (BO), with an average of BIave (BP). In 2008, the height of the food crisis, the BI was BI2008 (BQ). More information can be found in FOODSECURE Working Paper 18.

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Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

Prices & productivity

The FoodSecure project has looked at price-related food insecurity by looking at the commodity prices. This provides an alternative to looking at the national food price indices which might not be representative for poor consumers. A typology has been created which includes: (1) general price instability; (2) seasonal price instability; and (3) price uncertainty. This typology provides an indication of the potential of policy instruments to reduce price volatility. FOODSECURE Technical paper no. 5 by Korner and Kalkuhl (2015) provides more information about the data and methodology which are used to derive these results and can be found here.

The typology with respect to price related food insecurity is based on three indicators. First, national food price volatility measured as the extent of commodity price fluctuations in domestic food markets. Second, price transmission from international into domestic food markets which captures the risk of importing volatility from international food prices. Third, trade status defining whether a country is importer, exporter, or trade-switcher. This relates to a country's vulnerability to international price surges.

National food price volatility

- The general food price volatility in the country is low
- The irregular volatility (price uncertainty) in the country is low
- The seasonal range (percentage deviation between highest and lowest price of the seasonality obtained from decomposition analysis) is medium

Price transmission

- The maximum transmission elasticity (over all commodity prices) is medium
- The mean quintile of transmission elasticity quintiles over commodities is 4.33

Health and Nutrition

The definition of food security takes into account both the individual and the global level of food security and recognizes the importance of the nutritional value of the diet. It confirms that food security is a multidimensional issue that goes beyond the simple availability of food and requires access to sufficient, safe and nutritious food. The accepted definition is: ‘Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO 1998). The health and nutrition aspect includes indicators such as daily calorie intake (with a separation for consumption of fats and proteins – figures below).

Year	Daily calorie intake	Daily protein intake	Daily fat intake
1969	2075	42.9	13.4
1974	2063	45.4	13
1979	2099	45.1	13.6
1984	2044	43.7	14.7
1989	2095	43.8	18.8
1994	2008	42.3	17.4
1999	2288	49	22.6
2004	2395	51.6	25.8
2009	2432	55	25.1

Research and development

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The innovation profile for country name is based on this/these factor(s):

- Annual growth in total factor productivity (difference between rate of change in output and rate of change in input) in the period 2000-2009 has been high
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is very low
- The educational level is low
- There is a high economic incentive regime
- The level of information and communication technology (ICT) is low
- Spending on research and development (R&D) is low

Country report for: Bhutan

Introduction

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The typology is developed based on the countries' food or nutrition security profiles, as well as on their agricultural, economic, (agricultural) innovation systems, social and political profiles:

- The obesity index (based on the prevelance of obesity among adult women) is very low
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is high
- The agricultural potential (based on precipitation, growing season, soil fertility and water availability) is high
- The health infrastructure (based on % with access to (1) improved water sources and (2) proper sanitation)) is medium
- The political index (based on level of democratization, efficiency/quality of the government and political stability) is very high

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for Bhutan

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	19.87	4
	Irrigation gap	4.23	3
	Arable land per capita	0.18	3
Efficiency	Cereals yield	0.04	3
FNS Risk	Stunting	34.25	4
	Underweight	11.6	3
	Wasting	5.3	3
	Volatility		
	Social protection	3.38	3
	GDP per capita	4007.07	2

The scores in the table above result in the following problems for Bhutan

- None of the categorized FNS profiles

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for Bhutan

- The country is strengthening its risk management and institutions (based on FAPDA 2014)
- There is no public storage in the country (FAPDA 2014)
- The country has not changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have not been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

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Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

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Health and Nutrition

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Research and development

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Country report for: British Indian Ocean Territory

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The status of different policy instruments related to food security for British Indian Ocean Territory

- The country is not strengthening its risk management and institutions (based on FAPDA 2014)
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Country report for: India

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Typology

A categorization of countries based on their characteristics can help policy makers in developing the right strategy, as it facilitates the interpretation and drawing of suitable conclusions from case studies and successful policies in other countries. In this FOODSECURE project, the typology will help calibrating models and interpreting results at national levels, as well as guide the selection of case studies by project partners.

The typology is developed based on the countries' food or nutrition security profiles, as well as on their agricultural, economic, (agricultural) innovation systems, social and political profiles:

- The food security index (based on average daily calorie intake, share of animal proteins, and calorie deficit) is very low
- The nutrition security index (based on % undernourished , % of women suffering from anemia and under-five mortality rates) is low
- The obesity index (based on the prevelance of obesity among adult women) is very low
- The economic performance (based on per capita GDB, the GINI coefficient, and the women's economic opportunity index) is low
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is medium
- The agricultural potential (based on precipitation, growing season, soil fertility and water availability) is medium
- The health infrastructure (based on % with access to (1) improved water sources and (2) proper sanitation)) is low
- The political index (based on level of democratization, efficiency/quality of the government and political stability) is high
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is medium

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for India

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	16.16	4
	Irrigation gap	2.47	2
	Arable land per capita	0.14	3
Efficiency	Cereals yield	0.04	4
FNS Risk	Stunting	47.9	5
	Underweight	43.5	5
	Wasting	20	5
	Volatility	0.01	2
	Social protection	3.5	3
	GDP per capita	2455.94	2

The scores in the table above result in the following problems for India

- Chronic malnutrition
- Acute malnutrition
- Hunger without volatility

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for India

- The country is strengthening its risk management and institutions (based on FAPDA 2014)
- There is public storage in the country (FAPDA 2014)
- The country has changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

Agricultural and food imports play a particular key role in terms of food security in low income countries. Indeed, dependency on imports for food may raise a problem for food security in particular in the case of sudden price increase which put up national food bill. The national state of food availability combining food imports and domestic food production thus constitutes some crucial information. The Bonilla Index, which is the ratio of national food import expenditure to the total value of exports, is a useful indicator of national access to the world food supply. This is a consistent indicator of the national capacity to finance food imports from exports. In this regard, it is an interesting indicator of the vulnerability of food security to trade in developing countries, especially for net food importing countries. The Bonilla Index in the period 1995-2010 for country name ranged between BImin (BN) and BImax (BO), with an average of BIave (BP). In 2008, the height of the food crisis, the BI was BI2008 (BQ). More information can be found in FOODSECURE Working Paper 18.

The Bonilla Index is influenced by the Nominal rate of assistance for importable food products (NRAm). If NRAm increases (resp. decreases), for example due to higher (resp. lower) food import tariffs or domestic food production subsidies, the BI automatically increases (resp. decreases) due to the price rise for imported food, with a negative (resp. positive) effect on national food security. In country name, the NRAm ranged between NRAmin and NRAmax (mean: NRAmean), and was NRA2008 in 2008.

Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

Prices & productivity

The FoodSecure project has looked at price-related food insecurity by looking at the commodity prices. This provides an alternative to looking at the national food price indices which might not be representative for poor consumers. A typology has been created which includes: (1) general price instability; (2) seasonal price instability; and (3) price uncertainty. This typology provides an indication of the potential of policy instruments to reduce price volatility. FOODSECURE Technical paper no. 5 by Korner and Kalkuhl (2015) provides more information about the data and methodology which are used to derive these results and can be found here.

The typology with respect to price related food insecurity is based on three indicators. First, national food price volatility measured as the extent of commodity price fluctuations in domestic food markets. Second, price transmission from international into domestic food markets which captures the risk of importing volatility from international food prices. Third, trade status defining whether a country is importer, exporter, or trade-switcher. This relates to a country's vulnerability to international price surges.

National food price volatility

- The general food price volatility in the country is low
- The irregular volatility (price uncertainty) in the country is low
- The seasonal range (percentage deviation between highest and lowest price of the seasonality obtained from decomposition analysis) is low

Price transmission

- The maximum transmission elasticity (over all commodity prices) is very low
- The mean quintile of transmission elasticity quintiles over commodities is 2

Health and Nutrition

The definition of food security takes into account both the individual and the global level of food security and recognizes the importance of the nutritional value of the diet. It confirms that food security is a multidimensional issue that goes beyond the simple availability of food and requires access to sufficient, safe and nutritious food. The accepted definition is: ‘Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO 1998). The health and nutrition aspect includes indicators such as daily calorie intake (with a separation for consumption of fats and proteins – figures below).

Year	Daily calorie intake	Daily protein intake	Daily fat intake
1969	1967	47	25.9
1974	1861	43.3	25.6
1979	1944	45.1	27.6
1984	2102	48	29.9
1989	2242	51.8	33.6
1994	2100	47	34.4
1999	2216	49.7	39.3
2004	2130	47.4	39.4
2009	2193	48.7	43.9

Research and development

Innovations play a key role in enhancing human welfare, reducing poverty, and promoting economic growth in developing countries. In the agricultural sector, innovation leads to improved engineering and communication, which supports food production, develops biotechnology, and sets new platforms and institutional arrangements for farmers.

The innovation profile for country name is based on this/these factor(s):

- Annual growth in total factor productivity (difference between rate of change in output and rate of change in input) in the period 2000-2009 has been high
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is medium
- The educational level is high
- There is a low economic incentige regime
- The level of information and communication technology (ICT) is low
- Spending on research and development (R&D) is low

Country report for: Maldives

Introduction

The FOODSECURE project aims to design effective and sustainable strategies for assessing and addressing the short- and long-term challenges of food and nutrition security (FNS). The project will provide a variety of analytical tools to experiment, analyse, and coordinate policies to address tight and volatile food markets. More specifically, FOODSECURE aims to:

-Better understand the causes of hunger and malnutrition and the determinants of global food and nutrition security.
-To improve the ability of decision makers to foresee and respond to future food and nutrition security crises.
-Provide guidance to stakeholders on technological and institutional change and policy strategies to improve global FNS.

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Typology

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The typology is developed based on the countries' food or nutrition security profiles, as well as on their agricultural, economic, (agricultural) innovation systems, social and political profiles:

- The food security index (based on average daily calorie intake, share of animal proteins, and calorie deficit) is very high
- The nutrition security index (based on % undernourished , % of women suffering from anemia and under-five mortality rates) is medium
- The obesity index (based on the prevelance of obesity among adult women) is high
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is very low
- The health infrastructure (based on % with access to (1) improved water sources and (2) proper sanitation)) is very high

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for Maldives

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	12.32	3
	Irrigation gap		
	Arable land per capita	0.01	1
Efficiency	Cereals yield	0.02	2
FNS Risk	Stunting	26.1	3
	Underweight	21.75	4
	Wasting	11.8	5
	Volatility	0.05	5
	Social protection	3.62	5
	GDP per capita	6309.14	3

The scores in the table above result in the following problems for Maldives

- Acute malnutrition

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for Maldives

- The country is not strengthening its risk management and institutions (based on FAPDA 2014)
- There is no public storage in the country (FAPDA 2014)
- The country has not changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have not been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

Agricultural and food imports play a particular key role in terms of food security in low income countries. Indeed, dependency on imports for food may raise a problem for food security in particular in the case of sudden price increase which put up national food bill. The national state of food availability combining food imports and domestic food production thus constitutes some crucial information. The Bonilla Index, which is the ratio of national food import expenditure to the total value of exports, is a useful indicator of national access to the world food supply. This is a consistent indicator of the national capacity to finance food imports from exports. In this regard, it is an interesting indicator of the vulnerability of food security to trade in developing countries, especially for net food importing countries. The Bonilla Index in the period 1995-2010 for country name ranged between BImin (BN) and BImax (BO), with an average of BIave (BP). In 2008, the height of the food crisis, the BI was BI2008 (BQ). More information can be found in FOODSECURE Working Paper 18.

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Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

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The FoodSecure project has looked at price-related food insecurity by looking at the commodity prices. This provides an alternative to looking at the national food price indices which might not be representative for poor consumers. A typology has been created which includes: (1) general price instability; (2) seasonal price instability; and (3) price uncertainty. This typology provides an indication of the potential of policy instruments to reduce price volatility. FOODSECURE Technical paper no. 5 by Korner and Kalkuhl (2015) provides more information about the data and methodology which are used to derive these results and can be found here.

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Health and Nutrition

The definition of food security takes into account both the individual and the global level of food security and recognizes the importance of the nutritional value of the diet. It confirms that food security is a multidimensional issue that goes beyond the simple availability of food and requires access to sufficient, safe and nutritious food. The accepted definition is: ‘Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO 1998). The health and nutrition aspect includes indicators such as daily calorie intake (with a separation for consumption of fats and proteins – figures below).

Year	Daily calorie intake	Daily protein intake	Daily fat intake
1969	1629	49	34.7
1974	1737	65.4	29.7
1979	2061	66	23.4
1984	2215	85.8	36.1
1989	2311	75.1	43.8
1994	2368	88.6	43.8
1999	2348	94.5	49.9
2004	2206	67.6	47.5
2009	2400	86.1	46.9

Research and development

Innovations play a key role in enhancing human welfare, reducing poverty, and promoting economic growth in developing countries. In the agricultural sector, innovation leads to improved engineering and communication, which supports food production, develops biotechnology, and sets new platforms and institutional arrangements for farmers.

Country report for: Nepal

Introduction

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Typology

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The typology is developed based on the countries' food or nutrition security profiles, as well as on their agricultural, economic, (agricultural) innovation systems, social and political profiles:

- The food security index (based on average daily calorie intake, share of animal proteins, and calorie deficit) is very low
- The nutrition security index (based on % undernourished , % of women suffering from anemia and under-five mortality rates) is low
- The obesity index (based on the prevelance of obesity among adult women) is very low
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is low
- The agricultural potential (based on precipitation, growing season, soil fertility and water availability) is medium
- The health infrastructure (based on % with access to (1) improved water sources and (2) proper sanitation)) is medium
- The political index (based on level of democratization, efficiency/quality of the government and political stability) is low
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is very low

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for Nepal

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	18.06	4
	Irrigation gap	2.02	2
	Arable land per capita	0.09	2
Efficiency	Cereals yield	0.03	3
FNS Risk	Stunting	48.97	5
	Underweight	36.97	5
	Wasting	11.73	5
	Volatility	0.02	4
	Social protection	3.12	3
	GDP per capita	1078.62	1

The scores in the table above result in the following problems for Nepal

- Chronic malnutrition
- Acute malnutrition
- Overall hunger and malnutrition

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for Nepal

- The country is strengthening its risk management and institutions (based on FAPDA 2014)
- There is no public storage in the country (FAPDA 2014)
- The country has not changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

Agricultural and food imports play a particular key role in terms of food security in low income countries. Indeed, dependency on imports for food may raise a problem for food security in particular in the case of sudden price increase which put up national food bill. The national state of food availability combining food imports and domestic food production thus constitutes some crucial information. The Bonilla Index, which is the ratio of national food import expenditure to the total value of exports, is a useful indicator of national access to the world food supply. This is a consistent indicator of the national capacity to finance food imports from exports. In this regard, it is an interesting indicator of the vulnerability of food security to trade in developing countries, especially for net food importing countries. The Bonilla Index in the period 1995-2010 for country name ranged between BImin (BN) and BImax (BO), with an average of BIave (BP). In 2008, the height of the food crisis, the BI was BI2008 (BQ). More information can be found in FOODSECURE Working Paper 18.

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Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

Prices & productivity

The FoodSecure project has looked at price-related food insecurity by looking at the commodity prices. This provides an alternative to looking at the national food price indices which might not be representative for poor consumers. A typology has been created which includes: (1) general price instability; (2) seasonal price instability; and (3) price uncertainty. This typology provides an indication of the potential of policy instruments to reduce price volatility. FOODSECURE Technical paper no. 5 by Korner and Kalkuhl (2015) provides more information about the data and methodology which are used to derive these results and can be found here.

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National food price volatility

- The general food price volatility in the country is medium
- The irregular volatility (price uncertainty) in the country is medium
- The seasonal range (percentage deviation between highest and lowest price of the seasonality obtained from decomposition analysis) is medium

Price transmission

- The maximum transmission elasticity (over all commodity prices) is very low
- The mean quintile of transmission elasticity quintiles over commodities is 1

Health and Nutrition

The definition of food security takes into account both the individual and the global level of food security and recognizes the importance of the nutritional value of the diet. It confirms that food security is a multidimensional issue that goes beyond the simple availability of food and requires access to sufficient, safe and nutritious food. The accepted definition is: ‘Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO 1998). The health and nutrition aspect includes indicators such as daily calorie intake (with a separation for consumption of fats and proteins – figures below).

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1969	1673	41.4	17.7
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1979	1634	41	19.3
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1989	2203	53.1	29.5
1994	2142	51.7	31.4
1999	2162	51.1	32.2
2004	2231	54.2	33.4
2009	2336	56.1	39.2

Research and development

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The innovation profile for country name is based on this/these factor(s):

- Annual growth in total factor productivity (difference between rate of change in output and rate of change in input) in the period 2000-2009 has been high
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is very low
- The educational level is low
- There is a high economic incentive regime
- The level of information and communication technology (ICT) is low
- Spending on research and development (R&D) is low

Country report for: Pakistan

Introduction

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- The nutrition security index (based on % undernourished , % of women suffering from anemia and under-five mortality rates) is medium
- The obesity index (based on the prevelance of obesity among adult women) is low
- The economic performance (based on per capita GDB, the GINI coefficient, and the women's economic opportunity index) is very low
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is medium
- The agricultural potential (based on precipitation, growing season, soil fertility and water availability) is very low
- The health infrastructure (based on % with access to (1) improved water sources and (2) proper sanitation)) is low
- The political index (based on level of democratization, efficiency/quality of the government and political stability) is very low
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is low

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for Pakistan

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	17.93	4
	Irrigation gap	1.11	1
	Arable land per capita	0.13	3
Efficiency	Cereals yield	0.04	4
FNS Risk	Stunting	42.25	5
	Underweight	31.1	5
	Wasting	14.5	5
	Volatility	0.01	3
	Social protection	3.19	3
	GDP per capita	2151.41	2

The scores in the table above result in the following problems for Pakistan

- Chronic malnutrition
- Acute malnutrition
- Hunger without volatility

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for Pakistan

- The country is not strengthening its risk management and institutions (based on FAPDA 2014)
- There is public storage in the country (FAPDA 2014)
- The country has changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

Agricultural and food imports play a particular key role in terms of food security in low income countries. Indeed, dependency on imports for food may raise a problem for food security in particular in the case of sudden price increase which put up national food bill. The national state of food availability combining food imports and domestic food production thus constitutes some crucial information. The Bonilla Index, which is the ratio of national food import expenditure to the total value of exports, is a useful indicator of national access to the world food supply. This is a consistent indicator of the national capacity to finance food imports from exports. In this regard, it is an interesting indicator of the vulnerability of food security to trade in developing countries, especially for net food importing countries. The Bonilla Index in the period 1995-2010 for country name ranged between BImin (BN) and BImax (BO), with an average of BIave (BP). In 2008, the height of the food crisis, the BI was BI2008 (BQ). More information can be found in FOODSECURE Working Paper 18.

The Bonilla Index is influenced by the Nominal rate of assistance for importable food products (NRAm). If NRAm increases (resp. decreases), for example due to higher (resp. lower) food import tariffs or domestic food production subsidies, the BI automatically increases (resp. decreases) due to the price rise for imported food, with a negative (resp. positive) effect on national food security. In country name, the NRAm ranged between NRAmin and NRAmax (mean: NRAmean), and was NRA2008 in 2008.

Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

Prices & productivity

The FoodSecure project has looked at price-related food insecurity by looking at the commodity prices. This provides an alternative to looking at the national food price indices which might not be representative for poor consumers. A typology has been created which includes: (1) general price instability; (2) seasonal price instability; and (3) price uncertainty. This typology provides an indication of the potential of policy instruments to reduce price volatility. FOODSECURE Technical paper no. 5 by Korner and Kalkuhl (2015) provides more information about the data and methodology which are used to derive these results and can be found here.

The typology with respect to price related food insecurity is based on three indicators. First, national food price volatility measured as the extent of commodity price fluctuations in domestic food markets. Second, price transmission from international into domestic food markets which captures the risk of importing volatility from international food prices. Third, trade status defining whether a country is importer, exporter, or trade-switcher. This relates to a country's vulnerability to international price surges.

National food price volatility

- The general food price volatility in the country is low
- The irregular volatility (price uncertainty) in the country is low
- The seasonal range (percentage deviation between highest and lowest price of the seasonality obtained from decomposition analysis) is low

Price transmission

- The maximum transmission elasticity (over all commodity prices) is very low
- The mean quintile of transmission elasticity quintiles over commodities is 1

Health and Nutrition

The definition of food security takes into account both the individual and the global level of food security and recognizes the importance of the nutritional value of the diet. It confirms that food security is a multidimensional issue that goes beyond the simple availability of food and requires access to sufficient, safe and nutritious food. The accepted definition is: ‘Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO 1998). The health and nutrition aspect includes indicators such as daily calorie intake (with a separation for consumption of fats and proteins – figures below).

Year	Daily calorie intake	Daily protein intake	Daily fat intake
1969	2178	48.3	27.6
1974	2138	48.6	32.6
1979	2101	45.9	36.7
1984	2051	43.8	39.7
1989	2157	46.4	44.3
1994	2154	46.4	47.6
1999	2118	43.8	51.2
2004	2039	40.8	51.5
2009	2099	42.6	57.5

Research and development

Innovations play a key role in enhancing human welfare, reducing poverty, and promoting economic growth in developing countries. In the agricultural sector, innovation leads to improved engineering and communication, which supports food production, develops biotechnology, and sets new platforms and institutional arrangements for farmers.

The innovation profile for country name is based on this/these factor(s):

- Annual growth in total factor productivity (difference between rate of change in output and rate of change in input) in the period 2000-2009 has been low
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is low
- The educational level is low
- There is a high economic incentive regime
- The level of information and communication technology (ICT) is high
- Spending on research and development (R&D) is low

Country report for: Sri Lanka

Introduction

The FOODSECURE project aims to design effective and sustainable strategies for assessing and addressing the short- and long-term challenges of food and nutrition security (FNS). The project will provide a variety of analytical tools to experiment, analyse, and coordinate policies to address tight and volatile food markets. More specifically, FOODSECURE aims to:

-Better understand the causes of hunger and malnutrition and the determinants of global food and nutrition security.
-To improve the ability of decision makers to foresee and respond to future food and nutrition security crises.
-Provide guidance to stakeholders on technological and institutional change and policy strategies to improve global FNS.

More information about the FOODSECURE project is available at http://www.foodsecure.eu/

Typology

A categorization of countries based on their characteristics can help policy makers in developing the right strategy, as it facilitates the interpretation and drawing of suitable conclusions from case studies and successful policies in other countries. In this FOODSECURE project, the typology will help calibrating models and interpreting results at national levels, as well as guide the selection of case studies by project partners.

The typology is developed based on the countries' food or nutrition security profiles, as well as on their agricultural, economic, (agricultural) innovation systems, social and political profiles:

- The food security index (based on average daily calorie intake, share of animal proteins, and calorie deficit) is very low
- The nutrition security index (based on % undernourished , % of women suffering from anemia and under-five mortality rates) is medium
- The obesity index (based on the prevelance of obesity among adult women) is very low
- The economic performance (based on per capita GDB, the GINI coefficient, and the women's economic opportunity index) is medium
- Agricultural performance (based on per capita food production, value added per agricultural worker, and import share of agricultural products) is low
- The agricultural potential (based on precipitation, growing season, soil fertility and water availability) is very high
- The political index (based on level of democratization, efficiency/quality of the government and political stability) is high
- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is medium

The food security profiles can help in highlighting countries with unstable market conditions, high seasonality or acute and chronic malnutrition. Three key dimensions are identified to construct typology indicators. These include countries' potential to expand production, efficiency of grain production and food and nutrition security (FNS) risk. The data is based on monthly and annual observations from the period 2000 – 2012. More information about this data can be found in FOODSECURE Technical Paper 4 (Mujahid and Kalkuhl, 2014).

Table: food security indicators for Sri Lanka

Dimension	Indicator	Value	Score
Potential	Cereals yield gap	17.61	4
	Irrigation gap	1.82	1
	Arable land per capita	0.05	1
Efficiency	Cereals yield	0.03	3
FNS Risk	Stunting	18.3	2
	Underweight	21.83	4
	Wasting	14	5
	Volatility	0.02	5
	Social protection	3.56	5
	GDP per capita	3884.15	2

The scores in the table above result in the following problems for Sri Lanka

- Acute malnutrition

Markets & trade

The various policy responses to the food crisis in 2007/2008 and 2011 are thoroughly discussed in the price volatility literature (Kalkuhl et al. 2015). In the following, the existence of different policy measures/instruments in the country are provided. These instruments are: import and export regulation, price stabilization through public storage, and last risk management and fortification of market institutions. General production oriented policies are not considered since they aim at increasing production in the long-run rather than impacting on volatility in the short and medium-run.

The status of different policy instruments related to food security for Sri Lanka

- The country is strengthening its risk management and institutions (based on FAPDA 2014)
- There is no public storage in the country (FAPDA 2014)
- The country has changed its import tariff in the period 2007-2012 (based on the World Bank Food Policy Monitor 2014)
- Export restrictions have been applied in the period 2007-2012 (World Bank Food Policy Monitor 2014)

Agricultural and food imports play a particular key role in terms of food security in low income countries. Indeed, dependency on imports for food may raise a problem for food security in particular in the case of sudden price increase which put up national food bill. The national state of food availability combining food imports and domestic food production thus constitutes some crucial information. The Bonilla Index, which is the ratio of national food import expenditure to the total value of exports, is a useful indicator of national access to the world food supply. This is a consistent indicator of the national capacity to finance food imports from exports. In this regard, it is an interesting indicator of the vulnerability of food security to trade in developing countries, especially for net food importing countries. The Bonilla Index in the period 1995-2010 for country name ranged between BImin (BN) and BImax (BO), with an average of BIave (BP). In 2008, the height of the food crisis, the BI was BI2008 (BQ). More information can be found in FOODSECURE Working Paper 18.

The Bonilla Index is influenced by the Nominal rate of assistance for importable food products (NRAm). If NRAm increases (resp. decreases), for example due to higher (resp. lower) food import tariffs or domestic food production subsidies, the BI automatically increases (resp. decreases) due to the price rise for imported food, with a negative (resp. positive) effect on national food security. In country name, the NRAm ranged between NRAmin and NRAmax (mean: NRAmean), and was NRA2008 in 2008.

Land availability

This assessment focused on the issue of remaining agricultural land per region (FOODSECURE Technical Paper 7 by Mandrik, Doelman and Stehfest, 2015). Firstly, the total available and biophysically suitable land was assessed by excluding areas with certain biophysical restrictions. Secondly, institutional parameters of land suitability to exclude protected areas and - in some regions - also intact forests, were applied. Thirdly, a suitability index was used to define the potentially available land that is also suitable for conversion to agricultural production from a socio-economic perspective. Finally, the current agricultural land was subtracted from the total available and suitable land to derive the remaining (potentially available/suitable) land per region. Information on the quality and suitability of the available land is also provided, based on classes of crop productivity. The distribution of global grasslands in both intensive and extensive agricultural systems, and the effects of this distribution on potentially available land per region is also analysed.

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National food price volatility

- The general food price volatility in the country is medium
- The irregular volatility (price uncertainty) in the country is medium
- The seasonal range (percentage deviation between highest and lowest price of the seasonality obtained from decomposition analysis) is medium

Price transmission

- The maximum transmission elasticity (over all commodity prices) is low
- The mean quintile of transmission elasticity quintiles over commodities is 3.67

Health and Nutrition

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Year	Daily calorie intake	Daily protein intake	Daily fat intake
1969	2228	44.3	44.5
1974	2133	41.4	40
1979	2240	42.6	42
1984	2231	44.4	41.1
1989	2125	42.2	39
1994	2229	45.3	41.4
1999	2332	51	41.6
2004	2256	50.1	40.1
2009	2340	53.8	39.4

Research and development

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The innovation profile for country name is based on this/these factor(s):

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- The innovation index (based on an index for education, economic incentive regime, information infrastructure and the innovation system) is medium
- The educational level is high
- There is a low economic incentige regime
- The level of information and communication technology (ICT) is high
- Spending on research and development (R&D) is high