

*Background Paper 2 for  
FAO State of Food Insecurity (SOFI, 2006)*

## **Factors behind Success in Hunger Reduction: 1990-2002**

**Tugrul Temel**

Food and Agriculture Organization of the United Nations  
Agricultural and Development Economics Division  
Food Security and Agricultural Projects Analysis Service, Rome, Italy  
[tugrul.temel@fao.org](mailto:tugrul.temel@fao.org)

### **Abstract**

This study first reviews the global and regional progress in hunger reduction that has been achieved since 1990-92 and then identifies best- and worst-performing countries in hunger reduction. Two indicators are used in the assessment: absolute number of undernourished people and proportion of undernourished people. The World Food Summit sets the hunger target as reducing the absolute number, while the Millennium Development Goal 1 sets it to reducing the proportion of undernourished people to half its level in 1990-92 by 2015. The study further investigates factors behind hunger over the period 1990-92/2000-02, and contrasts the best- and worst-performing countries with respect to these factors.

**Key words:** World Food Summit Plan of Action, Millennium Development Goal, food security, hunger, poverty

Rome, 15 June 2006

## 1. Introduction

The 1996 World Food Summit (WFS) set the target of reducing by half the number of undernourished people from 824 million in 1990-92 to 412 million by 2015. Millennium Development Summit in 2000 has also set a similar target, halving the proportion in world population of the poor and hungry from 20 percent in 1990-92 to 10 percent by 2015. The present study first gives an overview of trends in undernourishment at the global and regional levels since 1990-92 and identifies best- and worst-performing countries in reducing undernourishment. Next, critical factors behind hunger are explored that account for most of the variation in the prevalence of undernourishment during the entire period from 1990-92 to 2000-02, and the best- and worst-performing countries are contrasted with respect to these critical factors.

## 2. Trends in undernourishment<sup>1</sup>

This section reviews trends in the number of undernourished people, the prevalence of undernourishment, daily energy supply and child malnutrition<sup>2</sup> and presents a ranking of countries based on their performance with respect to progress in these indicators.

### *Number of undernourished people*

It should be noted from the outset that the ranking of countries by using the criterion of reduction in head count of hungry people is most likely to indicate highly populated countries as successful. At the global level, progress in hunger reduction has been rather slow, with 852 million people estimated to be hungry in 2000–02. Of this number, 815 million live in developing countries, 28 million in the countries in transition and 9 million in developed countries.<sup>3</sup> During the second half of the decade, following the WFS baseline period of 1990–92, the number of chronically hungry in developing countries increased at a rate of almost 4 million each year, wiping out two thirds of the reduction of 27 million achieved during the previous five years. As a result, the number of undernourished people in developing countries declined by only 9 million. The goal of the WFS, reducing the number of undernourished in the developing world to approximately 400 million by 2015, cannot be met if the current rate of population growth and of decrease in the number of undernourished remain unchanged. To be on track, 40 million people should be lifted out of hunger each year until 2015.

At the regional level, progress has been uneven. Regions show significant differences: some show significant decrease in the number of undernourished, while others lag behind and/or show increase in trend (Table 1). The Asia and Pacific region has a peculiar status. While it is home to the majority of 519 million undernourished people in the developing world, it also

---

<sup>1</sup> Data used in this study have been obtained from various sources. Among the key sources are FAO Statistics Division for under-nourishment and daily energy supply data, the World Bank database for economic, social and demographic indicators, UN database for child malnutrition, and CREP database for frequency of natural disasters.

<sup>2</sup> Note that the prevalence of under-nourishment, average daily energy supply per day, and child mortality under five are highly correlated.

<sup>3</sup> Unless otherwise stated, analysis carried out in the rest of this chapter does not include developed countries and countries in transition.

shows the fastest reduction in hunger. Among the sub-regions, East Asia's success in terms of reduction in the number of hungry people is notable. Compared to all sub-regions, the rate of reduction in hunger was the fastest, falling from 199 million in 1990-92 to 152 million in 2000-02. In contrast, South Asia, one of the world's poorest regions, is trapped at high levels of undernourishment, which is estimated at 301 million as of 2000-02. During the last decade, with the exception of Sri Lanka, the number of hungry people increased in all of the countries in the region.

Sub-Saharan Africa houses 204 million hungry people, the second largest number of undernourished but, contrary to Asia, the region shows the fastest increase in the number of hungry people. Many factors including high population growth and poor agricultural performance are behind such a poor performance. The estimate of the number of undernourished people increased from 170 million in 1990-92 to 204 million in 2000-02. This figure suggests that Sub-Saharan Africa is moving in the opposite direction of the WFS target. With a few exceptions, this disappointing trend holds for most of the countries in the region.

The Latin America and Caribbean region shows slight reduction in the number of undernourishment. The region reduced the number from 60 million people in 1990-92 to 53 million people in 2000-02. In Near East and North Africa, estimates show an increasing trend in the number of hungry people, from 25 million in 1990-92 to close to 40 million in 2000-02.

At the country level, the list of success stories is shorter than that of the failures. During the decade, of 91 countries examined, 36 showed a reduction of 87 million in the number of hungry people: 14 countries in Sub-Saharan Africa, 11 in Latin America and the Caribbean, 8 in Asia and the Pacific, and 3 in Near East and North Africa. As shown in Table 2, 5 of the 10 best performing countries are in Asia and the Pacific, 3 in Sub-Saharan Africa, and 2 in Latin America and the Caribbean.

In terms of reduction in the number of hungry people, Asian countries get the highest mark. With a reduction of 52 million, China is at the top of the performance scale, followed by Viet Nam, Indonesia and Thailand. In the Latin America and Caribbean region, the two top performers are Peru and Brazil. In Sub-Saharan Africa, despite the overall grim picture, 3 countries, Ghana, Malawi and Mozambique, fall in the top 10 good performing countries.

In 55 of 91 countries, the number of hungry people either increased or remained unchanged over the decade. Overall trends in hunger reduction are not clear. Some show reduction in hunger in the first 5 years followed by poor performance in the second half; for some others, the situation is reversed. As seen from Figure 8, the overall picture for these 55 countries is not positive, showing an increase in the number of hungry people by about 66 million during 1990-02 to 2000-02. Regionally, 23 out of 55 countries are in Sub-Saharan Africa and contributed to the hunger by about 40 million, 9 in Asia and the Pacific by about 16 million, 12 in Latin America and the Caribbean by about 5.2 million and 11 in Near East and North Africa by about 5.2 million.

Of 10 countries with the most disappointing hunger trends shown in Table 2, 5 are in Asia and the Pacific, 3 in Sub-Saharan Africa, one in Latin America and the Caribbean, and one in Near East and North Africa. Democratic Republic of the Congo occupies the worst place,

with an increase of 23.3 million hungry people, followed by Tanzania, India, Democratic Republic of Korea, Bangladesh, etc.

### *The prevalence of undernourishment*

An unbiased assessment of trends in undernourishment should take into account population growth. Otherwise, those countries where the number of undernourished increases might look successful with respect to reduction in the prevalence if population increases more than the number of undernourished. This is in fact the case in Sub-Saharan Africa, where over the period 1990/92 – 2000/02 the number of hungry people increased by 20 percent but the prevalence declined by 3 percent points due to 2.72 annual percent increase in population (see Tables 1, 3 and 4). It should also be noted from the outset that those countries with the prevalence less than or equal to 2.5 percent have not been included in the analysis in this section.

As seen from Table 4, with a 3 percentage point reduction in the prevalence, progress has been limited across the developing world. This means that if the current trends continue, the MDG target to reduce the prevalence of undernourishment by half, from 20 percent to 10 percent, may not be obtained by 2015. Regionally, performance is not uniform. Table 4 shows that over the last decade, except in the Near East and North Africa and transition countries, the prevalence has declined. Asia and the Pacific experienced the highest decline with 4 percentage points, from 20 percent in 1990-92 to 16 percent in 2000-02. Sub-Saharan Africa and Latin America occupy the second place, with a decline of 3 percentage points. However, in Sub-Saharan Africa, high population growth masks this gain, amplifying the pace of hunger growth and making the region the fastest growth spot in hunger worldwide. This means that with the current speed of reduction in hunger, the region is unlikely to meet the MDG target of 18 percent by the next decade. The prevalence in Near East and North Africa and countries in transition increased from 8 percentage points to 10 in 2000-02 and from 6 percentage points to 7 in 2000-02, respectively.

At the country level, 60 out of 91 countries examined showed a decline in the prevalence, corresponding to a 71 million reduction in the number of undernourished. Of these 60 successful countries, 24 are in Sub-Saharan Africa (altogether decreased the number of hungry people by 5.6 million), 18 in Latin America and the Caribbean (hunger reduction by 10 million), 14 in Asia and the Pacific (reduction by 55 million), and 4 in Near East and North Africa (reduction by 0.5 million). Using the prevalence criterion, Table 5 shows the 10 best and 10 worse performing countries. As the table shows, 6 of the best 10 countries are in Sub-Saharan Africa, 3 in Latin America and the Caribbean, and one in Near East and North Africa. With a reduction of 29 percentage points, Peru occupies the top place among the best performers, followed by Ghana and Chad with 24 percent point reduction each, and Mozambique with 19 percent point reduction.

Since 1990-92, about 31 countries show that their prevalence either stagnated or slightly deteriorated. In these countries, the number of undernourished people increased by 50 million since 1990-92. Thirteen of these countries are in Sub-Saharan Africa (hunger increased about 37 million), one country in Asia and the Pacific (an increase about 4 million), 4 in Latin

America and the Caribbean (an increase about 4 million), and 5 in Near East and North Africa (an increase about 4 million). Of the 10 worst performers as shown in Table 5, 6 are in Sub-Saharan Africa, 3 in Latin America and one in Asia and the Pacific. Democratic Republic of the Congo leads this pack, with an increase of 39 percentage points, followed by Burundi and Democratic Republic of Korea. It should be noted that four of these countries; Democratic Republic of the Congo, Burundi, Dem. People's Rep. of Korea and United Republic of Tanzania are also among the 10 worst performers in terms of net increase in the number of undernourished people during 1990-92 and 2000-02 (Table 2).

#### *Daily energy supply (DES)*

Food supply approximates food consumption at the national level, and it is the basic yardstick of nutritional wellbeing of a country. The higher the food supply, the lower the prevalence, provided that the distribution of food supply remains unchanged. Global trends show some progress in food supply. Having grown by 5% since the early 1990s, DES person/day in the developing world reached 2657 calories/person/day in 2000-2002, which is considerably higher than the internationally set minimum daily intake of 2200 calories required for human survival.

As seen from Table 6, progress has varied significantly across regions. The annual percentage change in DES is the highest in Latin America and the Caribbean, with about 0.5 percent each year, reaching to the regional average of about 2,629 calories per day by 2000-02. Although this is a significant improvement, the regional average DES continues to be slightly less than the DES supply in developing world average (2657 calories per person/per day). Sub-Saharan Africa recorded 0.2 percent annual increase but despite this progress, the average calorie supply in the region of 2,197 in 2000-02 is the lowest of all developing regions. Near East and North Africa has modest annual calorie supply growth of 0.3 percent. It remains to have the highest level of calorie consumption of 3,030 calories per person/per day in 2000-02 among developing regions. Asia and the Pacific demonstrate a dual picture. East Asia shows an annual growth of about 0.2 percent, while South Asia performs a nearly three times higher growth in DES. At the aggregate regional level, the average daily calorie supply was 2,687 in 2000-02.

Of 91 countries examined, 73 witnessed an increase in DES, and altogether these 73 countries reduced the number of undernourished about 66 million. On the other hand, the other 18 countries experienced a decrease in DES and brought an increase in the number of undernourished by 45 million. Regionally, 25 out of 73 countries are from Sub-Saharan Africa and these countries reduced the number of hungry people by 5 million. Twenty countries are from Latin America and the Caribbean, which reduced the number of undernourished about 10 million; 16 from Asia and the Pacific reduced the number about 55 million and 12 from Near East and North Africa increased the number about 4 million.

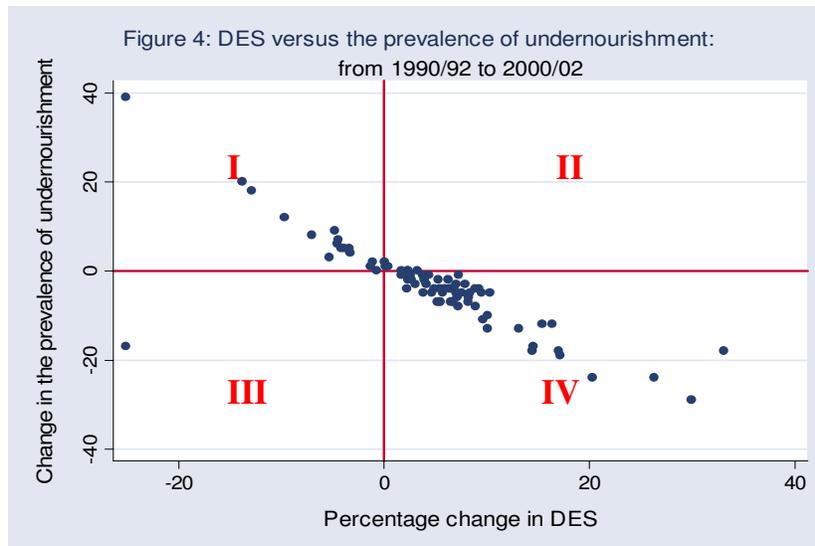
Table 7 indicates the ranking of the countries based on their performance in increasing DES. Peru occupies the top position among all developing countries with 30 percent increase in average per day DES during 1991-2001, followed by Ghana 26 percent, Chad 20 percent, Mozambique 17 percent and Viet Nam 16 percent. Of the 73 countries that witnessed an

increase in DES, 59 further witnessed a reduction in the prevalence of undernourishment. In other 3 countries, the prevalence has increased. This suggests a strong link between improved DES and reduced hunger. As seen from Table 7, of the 10 countries with the best record in DES, 6 are in Sub-Saharan Africa, 3 in Latin America, and one in Asia and the Pacific.

Of the 18 countries that witnessed a decrease in DES, 15 witnessed an increase in the prevalence. The highest decline in average per day DES took place in 10 countries from Sub-Saharan Africa, 3 from Latin America and the Caribbean, 1 in Near East and North Africa and 1 in Asia and the Pacific.

Table 7 shows that Democratic Republic of the Congo and Congo occupy the worst position among all developing countries with 25 percent decrease in average per day DES during 1991-2001, followed by Burundi 14 percent, Democratic People's Republic of Korea 13 percent and Liberia 10 percent. An interesting case to be stressed is that Congo has witnessed a decrease in both DES and the prevalence. As indicated in Table 7, of the 10 countries with the worse record in DES, 6 are in Sub-Saharan Africa, 2 in Latin America, and one in Asia and the Pacific and Near East and North Africa.

Figure 8 shows the contingent distribution of “percentage change in DES” and “change in the prevalence.” Quadrant I indicates the area in which DES declined and the prevalence increased:  $I = \{15 \mid \text{NENA}=1, \text{SSA}=10, \text{AP}=1, \text{LAC}=3\}$ . Quadrant II shows the area where the prevalence increased despite an increase in DES:  $II = \{3 \mid \text{NENA}=2, \text{SSA}=1, \text{AP}=0, \text{LAC}=0\}$ . Quadrant III indicates the area where the prevalence declined despite a decrease in DES:  $III = \{1 \mid \text{NENA}=0, \text{SSA}=1, \text{AP}=0, \text{LAC}=0\}$ . Finally, Quadrant IV shows the area where DES increased, while the prevalence declined:  $IV = \{59 \mid \text{NENA}=4, \text{SSA}=23, \text{AP}=14, \text{LAC}=18\}$ . For example, Quadrant IV includes 59 countries where DES increased as the prevalence declined. Four countries are from NENA, 23 from SSA, 14 from AP and 18 from LAC. Owing to increased food aid, Congo placed in Quadrant III experienced a decrease in the prevalence while DES also decreased.



Globally, as of 2000-02, 26 countries, which concurrently achieved an increase in DES and a reduction in the prevalence since 1990-92, still have less than 2400 calories per day per person. Of 26 countries, 15 are in SSA, 6 in AP and 5 in LAC. However, of 26 countries, only 12 have also reduced the absolute number of hungry people over the period 1990/92-2000/02: 8 countries in SSA have reduced it by 3.1 million; 2 in AP, by 0.8 million; and 2 in LAC, by 0.9 million. In other 14 countries, the number has risen.

### *Child malnutrition*

High nutritional stress during the childhood implies poor health, vulnerability to diseases and mortality, inability to learn, etc. Similar to other food security indicators, trends in underweight preschool children, which can be used as a measure of child malnutrition, are not uniform across regions. In 2003, over 150 million preschool children in the developing world were underweight. In Sub-Saharan Africa, the trend increased from 29 million to 37 million during 1990 and 2003. Based on the current trend, the outlook for the region remains bleak, with the exception of few countries. In South Asia, the absolute number of the underweight preschool children is the highest relative to other regions due to their large populations. The main contribution to this picture is from India, Bangladesh, Sri Lanka, Pakistan, and Nepal. In 2003, about 17 million underweight preschool children, which are about 13 percent of the world total, were in East Asia and the Pacific. On the positive side, the region is making the best progress of all the regions in reducing the number of the undernourished children. In Near East and North Africa, roughly 3 million preschool children are underweight, which is about 2.5 per cent of the world total. Latin America and the Caribbean have about 4 million underweight preschool children, which is around 3 percent of the world total. In this region, over the past decade, the percentage of underweight children has fallen from about 13–14% to 8–9%.

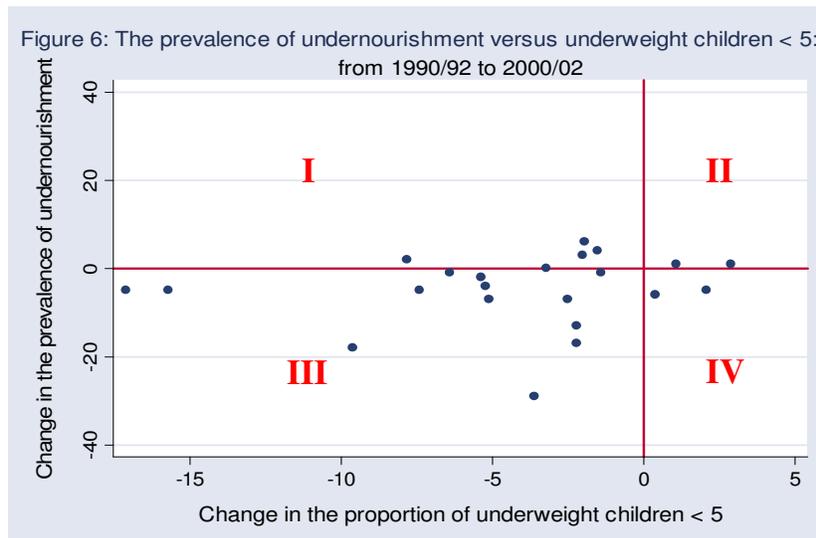
Although the progress in Asia has been remarkable during the last decade, it was not uniform across sub-regions. In South Asia, Bangladesh and Pakistan each have more than 8 million underweight preschool children, and the prevalence of underweight preschool children was higher than 45 percent in 2003. Although these countries have shown some progress in

reducing the problem, the progress has been slow and the likelihood of meeting the 2015 target is low. In East Asia, several countries in particular China and Indonesia are making significant progress in this area. China has already met the 2015 target. Viet Nam, Cambodia, Lao People’s Democratic Republic, and the Philippines are making good progress, but the trends are slow to reach the target by 2015.

In Near East and North Africa, countries can be divided into two groups; the first group that has made significant progress and is likely to reach the 2015 target includes Algeria, Djibouti, Jordan, Morocco, Oman, Syria, and Lebanon. In the second group, Egypt, Bahrain, Iraq and Yemen have about 56 percent of the underweight children, the progress so far has been slow, and to achieve the 2015 target requires increased investment in this area.

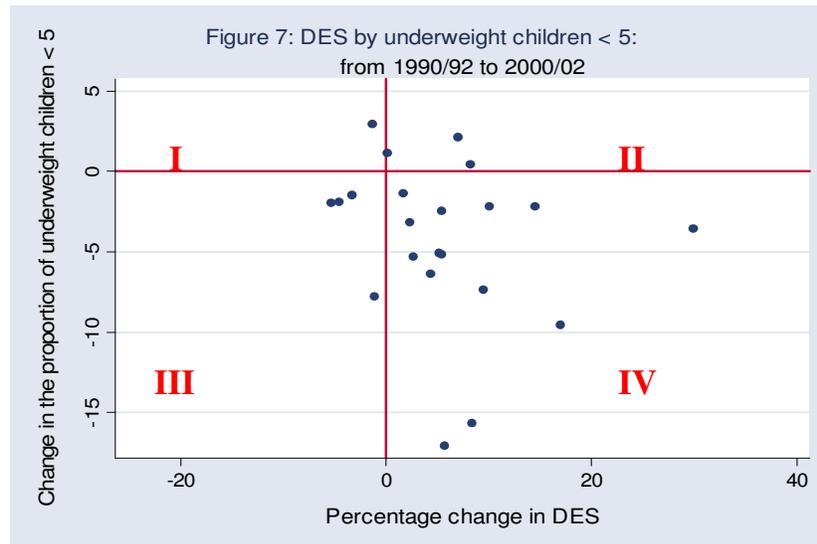
In Latin America, several countries such as Dominican Republic, Jamaica, Mexico, and Venezuela have already reached the target. Others including Bolivia, Colombia, El Salvador, Guyana, Haiti, Peru, and Uruguay, have made significant towards the target. Guatemala is making marginal progress, but in Brazil, Honduras, and Nicaragua there have been not much progress and for these countries likelihood of meeting the target will remain slim without a major increase in investment in this area.

Data indicate that declining prevalence of underweight children under 5 years of age is strongly associated with declining prevalence of under-nourishment over the period 1990-92/2000-02 (Figure 6). Of 21 countries in the sample, 13 are in Quadrant III = {13 | NENA=1, SSA=5, AP=3, LAC=4} in Figure 6, where both the prevalence of under-nourishment and of underweight children less than 5 have declined over the period concerned. The regional distribution of countries in other quadrants is: I = {4 | NENA=1, SSA=2, AP=0, LAC=1}, II = {2 | NENA=0, SSA=2, AP=0, LAC=0}, and IV = {2 | NENA=0, SSA=1, AP=1, LAC=0}.



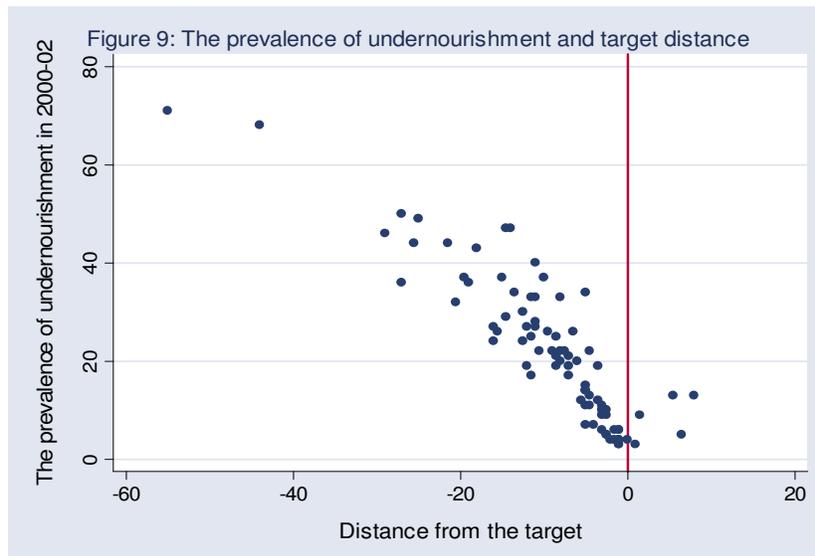
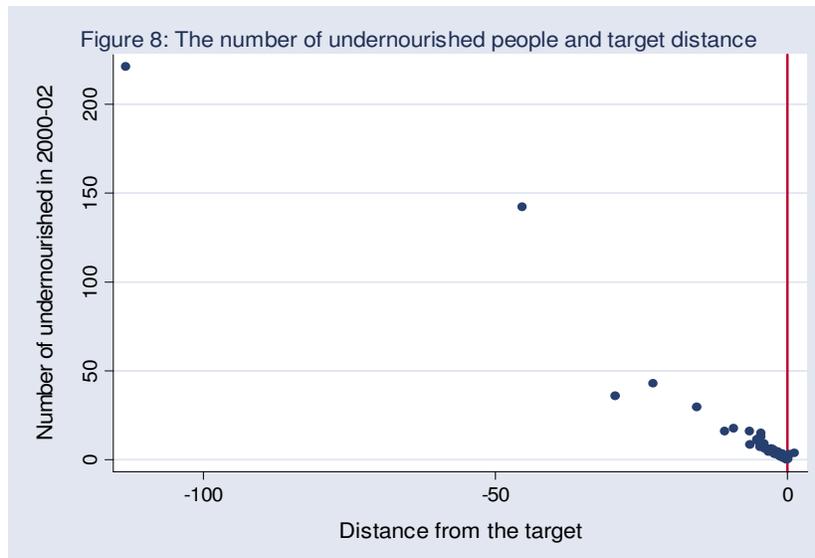
Data further indicate that increasing DES is strongly associated with a declining prevalence of underweight children less than 5 (Figure 7). Of 22 countries in the sample, 14 are in Quadrant IV = {14 | NENA=2, SSA=5, AP=3, LAC=4} in Figure 7, where DES increased while the prevalence of children underweight declined. The regional distribution of countries in other

quadrants is: I = {1 | NENA=0, SSA=1, AP=0, LAC=0}, II = {3 | NENA=0, SSA=2, AP=1, LAC=0}, and III = {4 | NENA=1, SSA=2, AP=0, LAC=1}.



### *Overall assessment*

Figure 8 shows the 2000-02 distribution of 91 countries with respect to the number of undernourished people and the distance each country is from its goal. Those in the left zone have yet to reach their target, and those in the right have already achieved it. Only Peru, Ghana and Suriname have already reached the target. A large majority of countries progress slowly, while about 20 countries are off-track. Figure 9 shows for the 83 countries the 2000-02 prevalence of undernourishment and the distance each country is from its goal. Again those in the left zone have yet to reach their target, and those in the right have already achieved it. Only Peru, Ghana, Cuba and Guyana have already reached their target. About 20 countries which have yet to reach their target are progressing well, while others are either lagging behind or off-track.



### 3. Characterizing best and worst performing countries

The country level reviews of progress in hunger reduction toward the goals of the WFS and MDG are based on 5 indicators, each of which provides complementary information on different dimensions of individual country performance. For example, the indicator of “net changes in the prevalence of under nourishment” tends to give high marks to those countries with high prevalence in the initial period. The reason is because the marginal progress in these countries tends to be much more dramatic than that in the countries with low initial (base) prevalence. The indicator of “percentage change in the prevalence” tends to overcome this bias but undermines the efforts required by the countries with high population growth. The reason is because for countries to get a high mark on prevalence they have to make sharper

cuts in the absolute number of hungry people to compensate for their population growth relative to the low population growth countries. The indicator of “net change in the number of undernourished people” would favour countries with large populations compare to the smaller countries. Using the indicator of “percentage change in the number of undernourished people,” however, would correct this bias by measuring the progress relative to the initial period. The fifth indicator “percentage change in average DES per day” would favour those countries with low average level of consumption, mainly the poorer countries. Similar to the indicator of “net changes in the prevalence of under nourishment,” the marginal increase in DES in countries with high average base tends to be much lower than those countries with low average base. DES also fails to capture the efforts of countries in terms of reducing inequality in food access. The indicator of “percentage change in the number of underweight preschool children” has not been used because it does not represent the food security situation of the entire population but in part captures the utilization of food.

The examination of the results shows that the performance of countries varied significantly by indicators. Therefore, to aggregate the results, for each indicator a simple ranking method was used to sort the best and the worse 10 performing countries. Then, equal weight -- 1 point-- was given to each country that ranked among the top 10 (or low 10) under each indicator. Finally, the country points were added across indicators leading to scores ranging from 1 to 5. For example, a country would score 5 if is ranked among the top 10 (or low 10) based on all indicators; similarly, a country would score 4 if is ranked among the top 10 (low 10) based on 4 indicators. As Table 8 shows, the overall aggregate scoring puts Peru, Ghana and Viet Nam at the top of the scale. When similar procedure is used to identify the 10 worse performing countries, Democratic Republic of the Congo, Burundi, Democratic Republic of Korea, and Venezuela occupy the lowest scale based on all of the 5 indicators (Table 9).

A quick review of the critical economic factors across the best and the worst performing country groups shows that the two groups performed significantly different with respect to food production, GDP per capita, agricultural GDP per capita, agriculture’s share in overall GDP, openness and political stability (Table 10). In general, the 10 best performers on average produced more food, generated higher overall GDP and agricultural GDP per capita, experienced lower share of agriculture in overall GDP, were more integrated in international trade markets, and maintained higher degree of political stability. The statistical analysis, in particular, showed significant role of openness in reducing the prevalence of under-nourishment. Trade increases capacities and improves efficiency of the functioning of markets. It also plays an important role in increasing income and access to food. Political stability further brings less hunger through its impact on the enabling environment for food security.

#### **4. Concluding remarks**

This paper presents an assessment of the progress in developing countries towards the WFS goal – highlighting which countries seem likely to succeed and which countries overall need much closer attention. Many countries are evidently making progress on hunger reduction. This is encouraging, and hopefully many of the countries that are currently off-track on hunger will be able to make up sufficient ground to hit the target by 2015.

Clearly, overall economic growth and food production, though necessary, are not sufficient. It is also vital to ensure that more of the country's resources are targeted towards achieving the WFS goal. It is just as important, however, to consider the way in which these resources are invested and how progress towards the WFS goal is shaped by the character and strength of national institutions. The next chapter looks more closely, therefore, at developments in creating enabling environment.

## Glossary

**Agriculture, value added (% of GDP):** Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources.

**Food production index (1999-2001 = 100):** Food production index covers food crops that are considered edible and that contain nutrients. Coffee and tea are excluded because, although edible, they have no nutritive value.

**Frequency of natural disasters (average per year):** Frequency of natural disaster, all type of natural disaster.

**GDP per capita (constant 2000 US\$):** GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant U.S. dollars.

**Inflation, consumer prices (annual %):** Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a fixed basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.

**Malnutrition prevalence, weight for age (% of children under 5):** Prevalence of child malnutrition (weight for age) is the percentage of children under five whose weight for age is more than two standard deviations below the median reference standard for their age.

**Mortality rate under-5 (per 1,000):** Under-5 mortality rate is the probability that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates. The probability is expressed as a rate per 1,000.

**Population, total:** Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin.

**Prevalence of undernourishment (% of population):** Population below minimum level of dietary energy consumption (also referred to as prevalence of undernourishment) shows the percentage of the population whose food intake is insufficient to meet dietary energy requirements continuously.

**School enrolment, primary (% gross):** Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of

education shown. Primary education provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.

**Total trade (% of GDP):** Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.

**Urban population (% of total):** Urban population is the share of the total population living in areas defined as urban in each country.

**Political Instability and Violence:** Measuring the likelihood of violent threats to, or changes in, government, including terrorism

Data are from the World Bank databank, except for the frequency of natural disasters taken from CREP (2005).

## References

1. Asian Development Bank (ADB). 2001. Agricultural biotechnology, poverty reduction, and food security (Working Paper, May 2001). Manila, Philippines.  
[http://www.adb.org/Documents/Books/Agri\\_Biotech/agribiotech.pdf](http://www.adb.org/Documents/Books/Agri_Biotech/agribiotech.pdf)
2. Australian Agency for International Development (AusAID). 2001. Viet Nam: Public sector management (Working Paper 2). Canberra, Australia.  
[http://www.ausaid.gov.au/publications/pdf/vietnam\\_wp2.pdf](http://www.ausaid.gov.au/publications/pdf/vietnam_wp2.pdf)
3. Boussard, J.M., Daviron, B., Gérard, F., and Voituriez, T. 2005. Food security and agricultural development in sub-Saharan Africa: building a case for more public support (Background Document). <http://www.fao.org/tc/TCA/work05/CIRAD.pdf>
4. The Ministry of Agriculture of the Government of China and FAO. 2005a. Agricultural and Rural Development in the 21st Century: Lessons from the Past and Policies for the Future (A Background Paper). <ftp://ftp.fao.org/docrep/fao/meeting/010/ae885e.pdf>
5. The Ministry of Agriculture of the Government of China and FAO. 2005b. The Beijing consensus on the future of global agriculture and rural areas: A blueprint for action. <ftp://ftp.fao.org/docrep/fao/meeting/010/j6422e.pdf>
6. FAO. Rome Declaration on World Food Summit and the WFS Plan of Action. [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/003/w3613e/w3613e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/003/w3613e/w3613e00.htm)
7. FAO. 2003. Trade reforms and food security – Conceptualizing the linkages. Rome. [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/DOCREP/005/Y4671E/Y4671E00.HTM](http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/005/Y4671E/Y4671E00.HTM)
8. FAO. 2004a. Committee on WFS 30<sup>th</sup> Session. Follow-up to the WFS: Report on the progress in the implementation of the Plan of Action. Rome: FAO. <http://www.fao.org/docrep/meeting/008/J2925e/J2925e00.htm>
9. FAO. 2004b. Eradicating hunger: Moving from pilot projects to national programmes to meet the World Food Summit goal. Rome: FAO. <ftp://ftp.fao.org/docrep/fao/007/ae523e/ae523e00.pdf>
10. FAO. 2005a. Committee on WFS 31<sup>st</sup> Session. Assessment of the WFS situation. <http://www.globalpolicy.org/socecon/hunger/oppressive/2005/0523armed.pdf>
11. FAO. 2005b. *The State of Food Insecurity*. <ftp://ftp.fao.org/docrep/fao/008/a0200e/a0200e.pdf>
12. FAO. 2005c. *The State of Food and Agriculture*. [ftp://ftp.fao.org/docrep/fao/008/a0050e/a0050e\\_full.pdf](ftp://ftp.fao.org/docrep/fao/008/a0050e/a0050e_full.pdf)
13. FAO, IFAD and WFP. 2005. Eradication of poverty and hunger. Background paper for the “High-Level Dialogue on Financing for Development and the ECOSOC High-Level Segment Roundtable Dialogue on the Eradication of Poverty and Hunger.” New York, USA: FAO, IFAD, WFP. <ftp://ftp.fao.org/docrep/fao/008/a0056e/a0056e00.pdf>
14. International Food Policy Research Institute (IFPRI). 2001. Sustainable food security for all by 2020: Proceedings of an International Conference. Bonn, Germany. <http://www.ifpri.org/pubs/books/2020conpro/2020conpro.pdf>
15. International Food Policy Research Institute (IFPRI). 2002. Reaching sustainable food security for all by 2020: getting the priorities and responsibilities right. Washington, DC: IFPRI. <http://www.ifpri.org/2020/books/actionlong.pdf>

16. International Fund for Agricultural Development (IFAD). 2002. Regional strategy paper: IFAD strategy for rural poverty reduction in Near East and North Africa. Rome, Italy: IFAD. <http://www.ifad.org/operations/regional/2002/pn/NENAeng.pdf>
17. Gill, J.G., Farrington, J., Anderson, E., Luttrell, C., Conway, T., Saxena, N.C., and Slater, R. 2003. Food Security and the Millennium Development Goal on Hunger in Asia (ODI Working Paper 231). London: Overseas Development Institute. [http://www.odi.org.uk/publications/working\\_papers/wp231/wp231\\_web.pdf](http://www.odi.org.uk/publications/working_papers/wp231/wp231_web.pdf)
18. OECD. 2006. Promoting pro-poor growth: Agriculture. Paris: OECD. <http://www.oecd.org/dataoecd/43/46/36427716.pdf>
19. Perry, G., Aria, O.S., Lopez, J.H., Maloney, W.F., Serven, L., 2006. Poverty reduction and growth: virtuous and vicious circles. Washington, DC: The World Bank. [http://siteresources.worldbank.org/EXTLACOFFICEOFCE/Resources/870892-1139877599088/virtuous\\_circles1\\_complete.pdf](http://siteresources.worldbank.org/EXTLACOFFICEOFCE/Resources/870892-1139877599088/virtuous_circles1_complete.pdf)
20. Pingali, P., Stamoulis, K., and Stringer, R. 2006. Eradicating Extreme Poverty and Hunger: Towards a Coherent Policy Agenda. Rome: FAO, Agricultural and Development Economics Division. <ftp://ftp.fao.org/docrep/fao/008/af839e/af839e00.pdf>
21. Rosegrant, M.W., Cline, S.A., Li, W., Sulser, T.B., and Valmonte-Santos, R.A. 2005. Looking Ahead: Long-Term Prospects for Africa's Agricultural Development and Food Security (2020 Discussion Paper 41). International Food Policy Research Institute, Washington, DC. <http://www.ifpri.org/2020/dp/vp41.pdf>
22. UN. 2004. Millennium Development Goals China's Progress: An Assessment by the UN Country Team. [http://www.undp.org.in/hdrc/APRI/Rsnl\\_Rsrc/China\\_MDG.pdf](http://www.undp.org.in/hdrc/APRI/Rsnl_Rsrc/China_MDG.pdf)
23. UN. 2005. The Millennium Development Goals Report. New York. <http://www.unfpa.org/icpd/docs/mdgrept2005.pdf>
24. UNDP. 2005a. Human Development Report, International cooperation at a crossroads: aid, trade and security in an unequal world, New York: UNDP. <http://hdr.undp.org/reports/global/2005/>
25. UNDP. 2005b. MDGs and Viet Nam's Socio-economic development plan: 2006-2010. <http://www.undp.org.vn/undp/docs/2005/sedp/mdgsedpe.pdf>
26. UN Millennium Project. 2005a. Investing in Development: A Practical Plan to Achieve the Millennium Development Goals. New York. <http://www.unmillenniumproject.org/documents/MainReportComplete-lowres.pdf>
27. UN Millennium Project 2005b. Innovation: Applying Knowledge in Development. Task Force on Science, Technology, and Innovation. New York. <http://www.unmillenniumproject.org/documents/Science-complete.pdf>
28. UN Millennium Project. 2005c. Trade for Development. Task Force on Trade. New York. <http://www.unmillenniumproject.org/documents/TF9-trade-complete.pdf>
29. UN Millennium Project. 2005d. Halving Hunger: It Can Be Done. Task Force on Hunger. [http://www.unmillenniumproject.org/documents/HTF-SumVers\\_FINAL.pdf](http://www.unmillenniumproject.org/documents/HTF-SumVers_FINAL.pdf)
30. UN ESCAP-UNDP-ADB. 2005. A future within reach: reshaping institutions in a region of disparities to meet the Millennium Development Goals in Asia and the Pacific. <http://www.unescap.org/mdgap/2ndMDGReport/MDG-PDF-I.pdf>
31. United States Department of Agriculture (USDA). 2005. Food security assessment (GFA-16). Washington, DC: Economic Research Service, USDA. <http://www.ers.usda.gov/publications/GFA16/GFA16c.pdf>

32. WB. 2004. A case study from China - Scaling up poverty reduction: A global learning process (Conference in Shanghai, May 25-27).  
<http://info.worldbank.org/etools/docs/reducingpoverty/case/33/fullcase/China%208-7%20Full%20Study.pdf>
33. WB and IMF. 2005. Global monitoring report. Millennium Development Goals: From Consensus to Momentum.  
<http://siteresources.worldbank.org/GLOBALMONITORINGEXT/Resources/complete.pdf>
34. WB and Oxford University Press. 2005. World development report 2005. A Better Investment Climate for Everyone. New York.  
[http://siteresources.worldbank.org/INTWDR2005/Resources/FNL\\_WDR\\_SA\\_Overview6.pdf](http://siteresources.worldbank.org/INTWDR2005/Resources/FNL_WDR_SA_Overview6.pdf)
35. WB. 2006. East Asia Update. Solid growth, new challenges. Washington, DC: The World Bank. <http://siteresources.worldbank.org/INTEAPHALFYEARLYUPDATE/Resources/550192-1143237132157/eapupdate-March06.pdf>
36. WB and IFPRI. 2006. Agriculture and achieving the MDG goals. Washington, DC: WB and IFPRI. <http://www.ifpri.org/pubs/cp/AgMDG/AgMDG.pdf>
37. Weeks, J., Thang, N., Roy, R., and Lim, J. 2004. Macroeconomics of poverty reduction- the case of Viet Nam: Seeking equity within growth. The Asia-Pacific Regional Programme on Macroeconomics of Poverty Reduction. Ha Noi, Viet Nam: UNDP. <http://www.undp.org.vn/undp/docs/2004/macroecon/equitygrowth.pdf>
38. Viet Nam Ministry of Planning and Investment and UNDP. 2005. Services sector development: A key to Viet Nam's sustainable growth. Ha Noi, Viet Nam. <http://www.undp.org.vn/undp/docs/2005/service/ssde.pdf>
39. von Braun, J., Gulati, A., Fan, S. 2004. Agricultural and economic development strategies and the transformation of China and India. Washington, DC: IFPRI. <http://www.ifpri.org/pubs/books/ar2004/ar04essay01.pdf>

Table 1: Number of undernourished persons (millions)

Regions	1990-1992	1995-1997	2000-2002	WFS target	2015(*)
Developing world	824	797	815	400	610
Asia and the Pacific	569	510	519	285	-
East Asia	199	155	152	100	135
South Asia	291	287	301	146	195
Latin America and the Caribbean	60	55	53	30	40
Near East and North Africa	25	35	39	12	37
Sub-Saharan Africa	170	197	204	85	205
Countries in Transition	-	23	28	-	-

Source: FAO (2005). The symbol (\*) shows forecasts under current trends.

Table 2: Country ranking by net change in the number of undernourished: 1990-92 to 2000-02

Best performers	Net decrease (million)	Worst performers	Net increase (million)
China	-51.4	Dem. Rep. of the Congo	23.3
Viet Nam	-5.9	United Rep. of Tanzania	5.7
Peru	-5.9	India	5.3
Indonesia	-3.8	Dem. People's Rep. of Korea	4.4
Ghana	-3.3	Bangladesh	3.3
Thailand	-3	Yemen	2.5
Brazil	-2.9	Venezuela	2
Myanmar	-1.2	Madagascar	1.7
Malawi	-1	Burundi	1.7
Mozambique	-0.7	Pakistan	1.6

Source: FAO (2005)

Table 3: Population (million) and % change in population, 1990/92 to 2000/02

Regions	1990-92	1995-97	2000-02	Annual % change 90/92-00/02
Developing Countries	4058.7	4431.1	4796.7	1.65
Asia & the Pacific	2815.2	3039.5	3256.1	1.43
South East Asia	444.2	484.7	522.8	1.61
East Asia	1241.5	1307.2	1364.5	0.90
South Asia	1125.3	1242.7	1363.3	1.92
Latin America & Caribbean	443.4	482.5	521.2	1.59
Near East and North Africa	322.8	362.6	399.4	2.15
Sub-Saharan	477.3	546.4	620	2.72
Countries in transition (*)		413.6	409.8	-0.08

Source: FAO (2005). The figures for 1993-95 have been placed for 1995-97.

Table 4: Trends in the prevalence of undernourished persons (%)

Regions	1990-92	1995-97	2000-02	2015(*)
Developing World	20	18	17	11
Asia and the Pacific	20	17	16	-
Southeast Asia	16	12	11	6
South Asia	26	23	22	12
Latin America and the Caribbean	13	11	10	6
Near East and North Africa	8	10	10	7
Sub-Saharan Africa	36	36	33	28
Countries in Transition	-	6	7	-

Source: FAO (2005). (\*) forecast with current trend

Table 5: Country ranking by net change in the prevalence: 1990-92 to 2000-02

Best performers	Net decrease (%)	Worst performers	Net increase (%)
Peru	-29	Dem. Rep. of the Congo	39
Ghana	-24	Burundi	20
Chad	-24	Dem. People's Rep. of Korea	18
Mozambique	-19	Liberia	12
Angola	-18	Botswana	9
Malawi	-17	Guatemala	8
Congo	-17	United Rep. of Tanzania	7
Guinea	-13	Venezuela	6
Viet Nam	-12	Panama	5
Guyana	-12	Gambia	5

Source: FAO (2005)

Table 6: Trends in DES (kcal/person/day), 1990/92-2000/02

Regions	1990-1992	1995-1997	2000-2002	Annual % change
Developing world	2530	2627	2657	0.44
Asia and the Pacific	2562	2670	2687	0.43
East Asia	2554	2504	2597	0.15
South Asia	2263	2284	2374	0.44
Latin America and the Caribbean	2498	2560	2629	0.47
Near East and North Africa	2921	3006	3030	0.33
Sub-Saharan Africa	2148	2138	2197	0.21
Countries in Transition	2828	2840	2836	0.00

Source: FAOSTAT (2005)

Table 7: Country ranking by % change in DES (kcal/person/day): 1990-92 to 2000-02

Best performers	Increase in % change in DES	Worst performers	Decrease in % change in DES
Peru	30	Dem. Rep. of the Congo	-25
Ghana	26	Congo	-25
Chad	20	Burundi	-14
Mozambique	17	Dem. People's Rep. of Korea	-13
Viet Nam	16	Liberia	-10
Guyana	15	Guatemala	-7
Malawi	15	Jordan	-5
Angola	14	Botswana	-5
Guinea	13	Venezuela	-5
Cuba	10	United Rep. of Tanzania	-4

Source: FAO (2005)

Table 8: Ranking of best performing countries according to the scores based on 5 criteria

Countries	Net change in prevalence	Net change in number	% change in prevalence	% change in number	% change in DES	Country Score: How many times among the 10 best
Peru	✓	✓	✓	✓	✓	5
Ghana	✓	✓	✓	✓	✓	5
Viet Nam	✓	✓	✓	✓	✓	5
Chad	✓	✓	✓		✓	4
Mozambique	✓	✓			✓	3
Malawi	✓	✓			✓	3
Guyana			✓	✓	✓	3
Myanmar			✓	✓	✓	3
Cuba			✓	✓	✓	3
China		✓		✓		2

Table 9: Ranking of worst performing countries according to the scores based on 5 criteria

Countries	Net change in prevalence	Net change in number	% change in prevalence	% change in number	% change in DES	Country Score: How many times among the 10 worst
Dem. Rep. of the Congo	✓	✓	✓	✓	✓	5
Burundi	✓	✓	✓	✓	✓	5
Dem. People's Rep. of Korea	✓	✓	✓	✓	✓	5
Venezuela	✓	✓	✓	✓	✓	5
Tanzania	✓	✓		✓	✓	4
Guatemala	✓		✓	✓	✓	4
Botswana	✓		✓	✓	✓	4
Liberia	✓		✓	✓	✓	4
Swaziland	✓		✓	✓		3
Yemen		✓		✓		2

Table 10: Average values of the critical factors across the 10 best and 10 worst countries

Critical factors	For 10 Best			For 10 Worst		
	1990/92	2000/02	% change	1990/92	2000/02	% change
Food Production (index)	67	103	54	97	102	5
GDP per capita, USD	457	647	42	1319	1368	4
Agriculture GDP per capita, USD	108	130	20	168	148	-12
Agricultural GDP, % of GDP	36	28	-22	27	27	0
Consumer prices (index)	395	11	-97	284	46	-84
Enrolment ratio	90	105	17	81	91	12
Openness ratio	62	81	31	69	69	0
Incidence of disaster	0.5	0.8	60	0.88	1.20	36
Political instability (index)	-0.14	-0.27	93	-0.87	-0.83	-5
Urban population (%)	35	41	17	37	41	11