

## Asia

- According to the study, the Asia-Pacific region will experience the worst effect on rice and wheat yields worldwide, and decreased yields could threaten the food security of 1.6 billion people in South Asia.
- The crop model indicates that in South Asia, average yields in 2050 for crops will decline from 2000 levels by about 50 percent for wheat, 17 percent for rice, and about 6 percent for maize because of climate change.
- In East Asia and the Pacific, yields in 2050 for crops will decline from 2000 levels by up to 20 percent for rice, 13 percent for soybean, 16 percent for wheat, and 4 percent for maize because of climate change.
- With climate change, average calorie availability in Asia in 2050 is expected to be about 15 percent lower and cereal consumption is projected to decline by as much as 24 percent compared to a no climate change scenario.
- In a no-climate change scenario, the number of malnourished children in South Asia would fall from 76 to 52 million between 2000 and 2050, and from 24 to 10 million in East Asia and the Pacific. Climate change will erase some of this progress, causing the number of malnourished children in 2050 to rise to 59 million in South Asia and to 14 million in East Asia and the Pacific, increasing the total number of malnourished children in Asia by about 11 million.
- To counteract the effects of climate change on nutrition, South Asia requires additional annual investments of 1.5 billion USD in rural development, and East Asia and the Pacific require almost 1 billion USD more. Over half of these investments in both regions must be for irrigation expansion.

Source: International Food Policy Research Institute, *Climate Change: Impact on Agriculture and Costs of Adaptation*, 2009

### Additional Facts

- The Asian countries most vulnerable to climate change are Afghanistan, Bangladesh, Cambodia, India, Lao PDR, Myanmar, and Nepal.
- Afghanistan, Bangladesh, India, and Nepal are particularly vulnerable to declining crop yields due to glacial melting, floods, droughts, and erratic rainfall, among other factors.
- Asia is the most disaster-afflicted region in the world, accounting for about 89 percent of people affected by disasters worldwide.
- More than 60 percent of the economically active population and their dependents—2.2 billion people—rely on agriculture for their livelihoods in developing parts of Asia.

Source: Asian Development Bank, *Addressing Climate Change in the Asia and Pacific Region*, 2009

## Sub-Saharan Africa

- African countries are particularly vulnerable to climate change because of their dependence on rainfed agriculture, high levels of poverty, low levels of human and physical capital, and poor infrastructure.
- The negative effects of climate change on crop production are especially pronounced in Sub-Saharan Africa, as the agriculture sector accounts for a large share of GDP, export earnings, and employment in most African countries. Furthermore, the vast majority of the poor reside in rural areas and depend on agriculture for their livelihoods. (Source: “Setting Priorities for Public Spending for Agricultural and Rural Development in Africa,” IFPRI, 2009)
- The crop model indicates that in 2050 in Sub-Saharan Africa, average rice, wheat, and maize yields will decline by up to 14 percent, 22 percent, and 5 percent, respectively, as a result of climate change.
- Irrigation water supply reliability, the ratio of water consumption to requirements, is expected to worsen in Sub-Saharan Africa due to climate change.
- Without climate change, calorie availability is expected to increase in Sub-Saharan Africa between 2000 and 2050. With climate change, however, food availability in the region will average 500 calories less per person in 2050, a 21 percent decline.
- In a no-climate change scenario, only Sub-Saharan Africa (of the 6 regional groupings of developing countries studied in the report) sees an increase in the number of malnourished children between 2000 and 2050, from 33 to 42 million. Climate change will further increase this number by over 10 million, resulting in 52 million malnourished children in 2050.
- Additional investments to increase agricultural productivity can compensate for many of the adverse effects of climate change. Sub-Saharan Africa needs 40 percent of the estimated 7 billion USD per year in additional global agricultural investments, the majority of that for rural roads.

Source: International Food Policy Research Institute, *Climate Change: Impact on Agriculture and Costs of Adaptation*, 2009

## **Middle East and North Africa**

- The crop modeling results indicate that climate change will have a negative effect on crop yields in the Middle East and North Africa in 2050. The region will face yield declines of up to 30 percent for rice, about 47 percent for maize and 20 percent for wheat.
- Without climate change, calorie availability is expected to increase in the Middle East and North Africa between 2000 and 2050, from 2,846 to 3,119 daily calories per person. With climate change, however, calorie availability in the region in 2050 will be about 2,500, or up to 500 calories less per person per day, compared to a no-climate change scenario.
- In a no-climate change scenario, North Africa and the Middle East will see dramatic improvements in the number of malnourished children between 2000 and 2050, declining from 3.5 million to just over 1 million. Climate change will counteract much of this progress, resulting in over 2 million malnourished children in 2050, 1 million more than in a no-climate change scenario.
- To counteract the effects of climate change on nutrition, North Africa and the Middle East require additional annual investments of 241-271 million USD. The majority of investment expenditures should be in agricultural research.

Source: International Food Policy Research Institute, *Climate Change: Impact on Agriculture and Costs of Adaptation*, 2009

## Latin America and the Caribbean

- The crop modeling results indicate that climate change will have a negative effect on crop yields in Latin America and the Caribbean in 2050. The region will face average yield declines of up to 6.4 percent for rice, 3 percent for maize, 3 percent for soybean, and up to 6 percent for wheat.
- In a no-climate change scenario, calorie availability in Latin America and the Caribbean would increase slightly between 2000 and 2050. With climate change, average food availability in the region will decrease by more than 300 calories per person, a decline of about 12 percent.
- In a no-climate change scenario, the number of malnourished children in Latin America and the Caribbean will decline from about 7.7 to 5.0 million between 2000 and 2050. Climate change will eliminate much of this progress, resulting in 6.4 million malnourished children in 2050, 1.4 million more than in a no-climate change scenario.
- To counteract the effects of climate change on nutrition, Latin America and the Caribbean require additional annual investments of about 1.3 billion USD, the majority of which should be used for agricultural research, irrigation efficiency and rural road improvements.

Source: International Food Policy Research Institute, *Climate Change: Impact on Agriculture and Costs of Adaptation*, 2009