

Summary of findings

Potential impacts of climate change on agriculture, land use and forestry

Potential impacts on agriculture

Major findings

- Sufficient evidence is now available from a variety of different studies to indicate that changes of climate would have an important effect on agriculture, including livestock. Yet the fact that there are major uncertainties regarding likely effects in specific regions should be a cause for concern. Studies have not yet conclusively determined whether, on average, global agricultural potential will increase or decrease.
- Negative impacts could be felt at the regional level as a result of changes in weather, diseases, pests and weeds associated with climate change, necessitating innovation in technology and agriculture management practices. There may be severe effects in some regions, particularly in regions of high present-day vulnerability that are least able to adjust technologically to such effects.
- There is a possibility that potential productivity of high and mid-latitudes may increase because of a prolonged growing season, but it is not likely to open up large new areas for production, and will be largely confined to the Northern Hemisphere.
- On balance, the evidence is that in the face of estimated changes of climate, food production at the global level can be maintained at essentially

the same level as would have occurred without climate change; but the cost of achieving this is unclear. Nonetheless, climate changes may intensify difficulties in coping with rapid population growth.

Principal issues

Magnitudes of possible dislocation

Under the estimate of changes in productive potential for the changes of climate outlined in this report, the cost of producing some mid-latitude crops, such as maize and soybean, could increase, reflecting a small net decrease in the global food production capability of these crops. Rice production could, however, increase if available moisture increased in Southeast Asia, but these effects may be limited by increased cloudiness and temperature. The average global increase in overall production costs due to climate change could thus be small.

Much depends on the possible benefits of the so-called 'direct' effects of increased CO₂ on crop yield. If plant productivity were substantially enhanced and more moisture were available in some major production areas, then world production of staple cereals could increase relative to demand. If, on the contrary, there is little beneficial direct CO₂ effect and climate changes are negative for agricultural potential in all or most of the major food-exporting areas, then the average costs of world agricultural production due to climate change could increase significantly.

Most vulnerable regions and sectors

On the basis of both limited resource capacity in relation to present-day population and possible future diminution of the agricultural resource