

## ABSTRACT

Effects of climate change on the welfare of human and natural systems in developing countries will not be determinate only by the changes in climate, the sensitivity of these systems to the changes will also determine how impacts are experienced. Human systems are characterized by their adaptability, evidenced throughout human existence. However, climate change presents a new challenge, not only because of the expected rise of temperature and the change in rain patterns, but also due to current context of failure in addressing the causes of poverty adequately. As a result, policy supporting adaptation has recently been cast as a necessary strategy for responding to climate change and supporting development, making adaptation the focus of much research.

This thesis addresses the impact of climate change on food security, and assesses the empirical evidence of the case study of Ethiopia. It also analyses possible adaptation measures to be implemented in the country.

The methodology used is the analysis of data, visually analyzed by crossing variables mapped by the geographic information system ArcGIS, that provides a very visual interpretation that helps the reader's understanding .

A new concept such as the climate smart agriculture is introduced, explained and applied to the case study. It is defined as 'agriculture that sustainably increases productivity, resilience, reduces or removes Greenhouse Gases (GHGs), and enhances achievement of national food security and development goals'.

Finally, different options for funding are studied to undertake the proposed changes, and voluntary carbon markets are considered the most suitable way to contribute to sustainable development in Ethiopia.