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## Vulnerability to Climate Change of African Indigenous Vegetable Farmers in Selected Agro-Climatic Zones of Kenya

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### Abstract

Climate change and variability poses a major challenge to sustainable development in sub-Saharan Africa, slowing or even hindering the achievement of poverty reduction as demonstrated in the fifth IPCC report on impacts of climate change on ecosystems, food security, health, and water sectors. Given the adverse impacts of warming and changing rainfall patterns on food security on the one hand and the high importance of rain-fed farming for the smallholders' income and livelihoods, climate change particularly affects those economies largely depending on farming. In Kenya, 75 % of the population lives in rural areas and 68 % of the labour force depends on agriculture. About one third suffer from food and nutrition insecurity with national stunting rates of 35 % of children under 5 years. African Indigenous Vegetables (AIVs) are rich in micronutrients with the potential to close the large nutrient gap among poor and food insecure households, particularly for vitamin A, C, and iron, but also to balancing the diet by an improved protein-calorie ratio. Due to increased demand and general resilience of AIVs to local climate variability, AIVs are affected by but are part of the solution to adapting to climate change. According to the HORTINLEA panel survey (n=1234), 35 % of the AIV farmers experienced increased rainfall in the course of their lives and 19.4 % indicate hotter temperatures during the dry season. Water stress is observed in the sparsely populated arid and semi-arid lands (ASAL) (80 % of the Kenyan territory), while the humid and semi-humid agro-climatic zones experience irregular and heavier rainfalls. One third of AIV farmers do not know how to adapt to climate variability and less than 10 % invest in irrigation or money saving schemes, which suggests lower adaptive capacity. Finally, the case study methodology for measuring indicators for analysing adaptive capacities of smallholder AIV farmers in three agro-climatic zones (Kakamega, Nakuru and Kajiado counties) by multi stage purposive sampling procedure of 180 farmers is presented.

**Keywords:** Adaptation, African indigenous vegetables, agro-climatic zones, climate change impact, food security