

Abstract

One of the consequences of increasing demand for water and energy sources is the depletion of natural resource bases while sustainable use of natural resources can substantially contribute to climate change and unwise use of these resources result in air and water pollution, as well as land degradation. This dissertation thesis examines “Household Energy and Water use in Hawassa”. The main goal of the thesis is to answer research questions related to the patterns of household water use and energy source choice in the face of growing economy, socio-demographic dynamics and climate change factors-particularly in the context of local environment.

As energy and water are the two important environmental goods, the pattern of their use has an impact on local environment, where the analysis of demand for energy source choice and water use has a significant impact, as households are a unit of analysis.

A key approach we followed in this thesis is analysing of household survey data based on stratification of socio-economic and demographic variances, geographic location (urban vs peri-urban), and environmental factors. The main energy related data were generated from household survey to analyse the energy source choice based on the three main energy sources; electricity, charcoal and fuelwood along with driving factors. Household income, fuel budget share, education, geographic stratification, level of education, gender, family size, information or knowledge on alternative fuel sources are a significant factors determine household energy demand.

Household demand for biogas energy supply conditioned on flexible financing options is an important area of the thesis. Credit financing with gender balanced and extended credit share with flexible loan repayment options, home water sewage system connectivity, availability of local resources (water, land, livestock and alternative fuelwood sources), and education are relevant factors determine biogas energy demand, where local planners and promoters need to wider and sustainable biogas technology subscriptions among low-income households.

In the area of household water use, the main driving forces were economic (income) and demographic growth (household size). Large family size, number of count stock of water-using devices, and wealth at income elasticity $+0.235$ drives positive and significant variation in household water use in Hawassa, while demographic variable age significantly affect water use at home with a negative sign. Therefore, policies that rely on quantified characteristics and drivers of household water use and savings behaviour will promote sustainable and efficient water management options in Hawassa and in cities of similar low-income countries elsewhere.