REEECAP 3.3 ENERGY-RELATED IMPACTS OF CLIMATE CHANGE IN RURAL NAMIBIA

Executive Summary

Climate change is a global phenomenon with highly variable ramifications across local climate systems. Current regional and local climate models project that climate change in Namibia will result in increased temperatures, increased climatic variability and increased occurrence of extreme events (DRFN and CSAG 2008).

These projected changes are expected to exacerbate the existing climate variability and natural resource problems that are currently experienced throughout Namibia.

Just as the locally observed changes in the climatic and environmental conditions are not uniform, climate change has a varying degree of impacts across sectors. The impact of climate change on the energy sector is of particular interest because of the intrinsic link between energy and development: access to energy is a prerequisite for development while development is needed to stimulate demand for energy. Not only are other sectors are inextricably dependent on power generation, but the energy sector fulfills livelihood needs and services that are increasingly vital in today's day and age; energy is directly connected to GDP and quality of life. On the other hand, development stimulates the demand for energy, increases its affordability and accessibility, and promotes the viability—and hopefully sustainability—of the energy sector (Ministry of Mines and Energy 1998).

Climate change also has a disproportionate impact on vulnerable social groups that are typically characterized by limited adaptive capacity, or the ability to undertake and implement measures and strategies to adjust to actual or expected climate change. These adaptation strategies and coping mechanisms are designed to minimize the negative impacts of climate change and create beneficial opportunities for people to take advantage of the changes. In Namibia, the inhabitants of low-income rural household have the fewest available resources and assets and the least capacity with which to cope with adverse effects of climate change.

However, climate change far from the only variable that impacts the life of vulnerable Namibians; rather, it is a compounding factor that only augments the severity of other developmental problems, such as population growth and resource scarcity. With a population growth rate of 3% during the end of the 20th century, the human population in Namibia is projected to reach 2,600,000 by 2020 (Mendelson et al. 2002). Such an

increase in population has ramifications on the availability and consumption rates of already vulnerable natural resources, such as water and wood resources. For example, due to population growth and development alone, water demand is expected to exceed extraction capacity by 2015 (DRFN and CSAG 2008). Additionally, rural Namibian households are highly dependent on wood for fuel, construction and sundry other livelihood activities. Wood scarcity is already a problem in many regions that have either few wood resources to begin with or decreased resources as a result of deforestation pressures; the projected population growth will only exacerbate these resource problems.

This report examines the energy-relate impacts of climate change in rural Namibian households in order to characterize the current and projected compounding impacts of climate change. Chapter 2 summarizes the most current Namibian historical climate trend analyses and climate change projections. To more closely examine the nature of poverty in rural Namibian households, Chapter 3 presents a synopsis of poverty, vulnerability, livelihoods, coping strategies and energy-related issues disclosed in the regional Participatory Poverty Assessment reports. The renewable energy and energy-efficiency baseline survey reports, found in Chapter 4, establish a firm, quantitative basis for assessing the current energy use patterns and needs in rural and peri-urban Namibian households.

Founded on the climate change projections and information about energy-related services in rural Namibian households, Chapter 5 discusses the energy-related vulnerabilities to climate change and the associated impacts expected in rural Namibian households. The analysis discloses the primary driving factors behind the climate change impacts and presents a list of appropriate technological, behavioral and policy-oriented adaptations that could minimize the identified energy-related impacts or optimize the benefits of positive impacts. The list of adaptations are not meant to be all-inclusive, but rather are meant to represent the range of measures and strategies that could moderate the expected negative impacts. Chapter 6 presents thematically synthesized adaptation measures and strategies along with an analysis of the complexity behind these issues. Finally, Chapter 7 presents a report summary and outlook.