

1 INTRODUCTION

This chapter describes the objective and scope of this study.

1.1 AIM

Ecofys International Projects (Ecofys) BV was contracted to participate in the project “Assessment of the commercialisation of selected sustainable energy technologies, products and services”. The focus of the project is to provide AREED1 with background information on the suitability of providing selected technologies, products and services in a commercially sustainable manner, in order to guide the screening and selection of investments and the development of business models. The aim was therefore, to increase the understanding of commercial applications and business structures through the completion of a number of small and focused technology commercialization assessments. These technology commercialization assessments will emphasize the commercialization of the products or services by describing not so much the technology itself but the technology specific factors required for commercialization.

1.2 SCOPE OF THE STUDY

1.2.1 RENEWABLE ENERGY ICE MAKING AND COOLING

Ecofys was specifically instructed to complete the component focusing on cooling and ice making with renewable energy. This report on the commercialisation potential of renewable energy cooling and ice making is based on Ecofys experience and expertise as well as information collected through our network, literature and internet searches.

¹ With the support of the UN Foundation, UNEP is initiating an effort directed at the African rural energy service sector. The AREED initiative seeks to create energy companies that use renewable energy technologies to meet the energy needs of the poor, thereby reducing the environmental and health consequences of existing energy use patterns. The objective of the AREED programme is to expand and support the private sector in five select African countries (Botswana, Zambia, Mali, Senegal and Ghana) in the delivery of products and services in the sustainable energy field. Sustainable energy in this context is associated with the use of renewable energy technologies, energy efficiency measures and changing energy use patterns to reduce environmental impact and in particular reduce green house gas emissions. The term technology, as used here, includes both products and services.

1.2.2 SIZE OF THE INVESTMENT

This study focuses on projects with an investment of US\$20,000 to US\$250,000. These investments can be made as loans or as equity in business producing products or services and will never make up the business full equity (at most 49%). For AREED, the real criterion is that of economy of scale. The investment is often used in order to scale up a business to a point where it is achieving scale economies. The main question for each business in this study therefore is: "how many products/customers are required to make the business commercially viable and profitable".

1.2.3 STRUCTURE OF THIS REPORT

This report is structured to assist the investor that has to analyse an investment proposal concerning renewable ice-making/cooling. In chapter 2 the various relevant product market combinations (PMCs) are identified and described in general. Chapter 3 describes more detailed the technologies involved of selected PMCs in more detail. Chapter 4 gives concise background information on the economics of renewable energy generation for renewable ice-making/cooling. Chapter five describes the renewable energy technologies that are available and the scale where they are economical. Finally, chapter six provides the recommendations and conclusions of this study. Two cases of solar ice-making demonstration projects have been included in the annexes 1 and 2.