

## **A behavioral finance perspective on sustainable energy investment decisions**

### **Master Thesis by Melanie Oschlies**

The discussion on the causes and effects of climate change together with the limited fossil fuel reserves increase the demand for renewable energies. However, insufficient technological maturity and cost competitiveness as well as lacking social acceptance hinder an effective development and a higher market penetration. Today only 6.4% of Europe's total energy consumption is covered through renewable energy sources. A further progression of the industry requires substantial investments in the near future. In this context the financial service industry plays an important role as promoter of renewable energies. Nevertheless, the financial industry's acceptance of renewable energies has not been researched in detail so far. Therefore, my thesis studies institutional investors' behavior regarding sustainable energy investments. Qualitative interviews and a conjoint analysis are used to gain insights into decision making processes and to derive relevant decision criteria. A particular focus lies thereby on behavioral aspects that influence investment decisions.

#### **Sustainability and Finance**

My master thesis addresses the relevance of different criteria for decisions of institutional investors related to renewable energies. The examined criteria are return, type of energy, investment horizon, market growth, technological maturity, public subsidies and external recommendation. The main research question is which of the presented criteria are most important for investment decisions in the renewable energy sector and which additional criteria are of particular relevance. Furthermore, it is studied if the relevance of separate criteria differs depending on other aspects (e.g. depending on energy type or technological maturity).

Sustainability and finance are addressed in two ways: on the one hand, by directly studying the renewable energy sector and its dependence on external financing and on the other hand, by integrating (through qualitative questions) the relevance of sustainability itself as a criterion in investment decisions.

#### **Empirical Research**

The empirical research consisted of a qualitative and a quantitative section. First, eight interviews with experts from the financial services industry have been conducted. Their

responses served as basis for the compilation of the questionnaire. Moreover, the importance of criteria such as social sustainability or regulatory environment was determined through the interviews.

The survey was conducted as an adaptive conjoint analysis. Conjoint analyses originate from marketing research and are applied to other research areas only for a short time. An advantage of conjoint analysis is the opportunity to simultaneously ask for the rating of several criteria (and their relative importance), by letting participants choose between hypothetical investment objects. A hypothetical investment object was in the case of my survey a company or project that is active in the renewable energy sector and could be described by the criteria introduced before.

During the survey the participants (members of the Swiss Financial Analysts' Association) selected hypothetical investment objects in an online questionnaire. Depending on the type of question the participants were asked to choose between two investment objects or to indicate the probability of an investment in a certain object.

## **Results**

It is shown that besides the risk return relationship of an investment object especially the type of energy and external recommendations e.g. by other investors are relevant for institutional investors when investing in renewable energies. The degree of technological maturity and the regulatory environment are of minor relevance. The high importance of external recommendations illustrates the risk that is still associated with investments in the renewable energy sector – especially for investors that did not have experience in this area before. Through recommendations the underlying insecurity could be reduced. Solar energy was the most favored, followed by wind. Bio fuels and wave technologies are still seen as risky for investors. In addition, the little importance of the regulatory environment was striking. In contrary to the current practice and the opinion of many politicians and scientists in this area, regulatory support and financial subsidies are of little importance to investors.