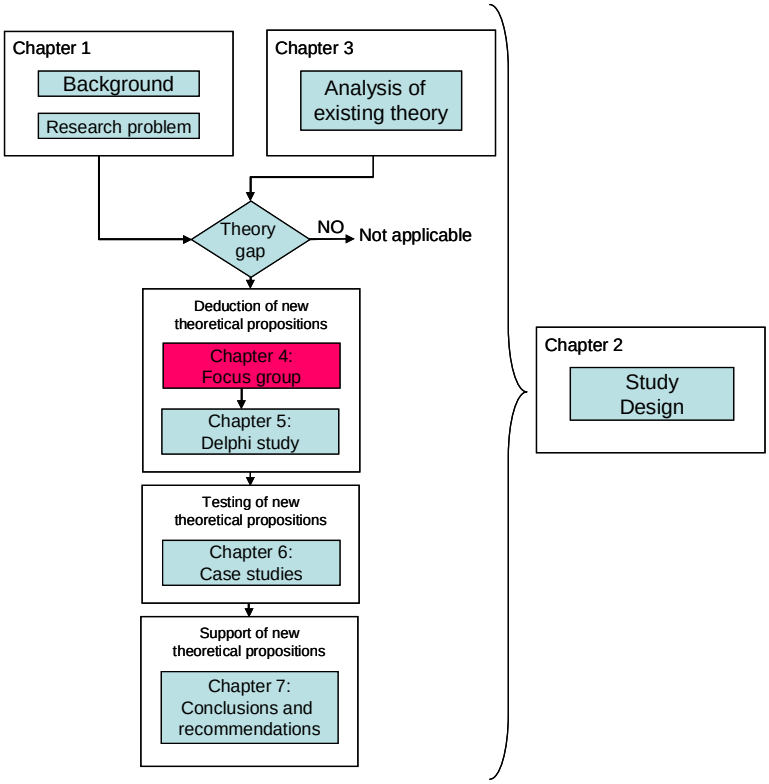
Chapter 4: Focus Group



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4.1. Introduction

The purpose of the focus group was to gather information on as many factors as were required for the selection of renewable energy technologies as possible from experts in the field. These factors were then used as an input to the Delphi study.

The main stages of the focus group process are: planning, recruiting, moderating, and analysis and reporting (Blackburn 2000) as shown in Figure 4-1. During the planning stage, the researcher familiarised herself with the focus group technique and did a literature survey on the factors which are important for the selection of sustainable energy technologies.

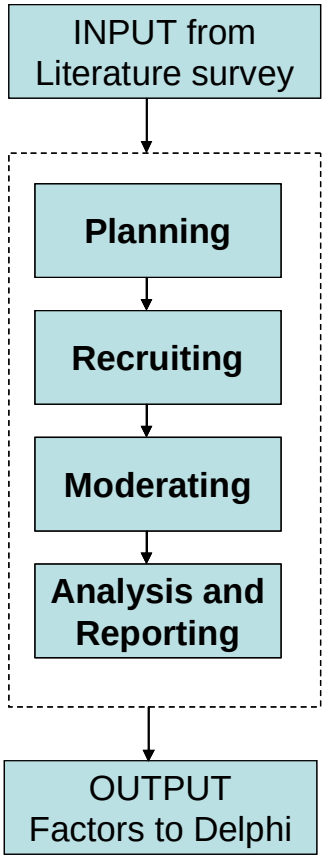


Figure 4-1: Main stages of the focus group process (Blackburn 2000)

4.2. Planning and recruiting

The role of the moderator or facilitator is critical to the success of the focus group (Blackburn 2000; Delbecq, *et al.* 1975). The moderator must clearly state the purpose and the consequential expectations of the group, facilitate interaction (Gibbs 1997) by outlining the topics to be discussed and control the direction of the conversation (Blackburn 2000). The moderator is the conversational controller (Hutt 1979) who promotes open debate by using open-ended questions and probes

deeper into motivations for statements made (Gibbs 1997). The moderator further ensures that the conversation does not drift but that the group addresses the key topics of interest (Blackburn 2000; Delbecq*, et al.* 1975).

Focus groups are in-depth, open-ended group discussions. This implies that the focus group is not very structured (Robinson 1999). Focus groups should be semi-structured but not highly structured (Hutt 1979). The use of an interview guide or list of questions to be answered during the focus group is recommended (Blackburn 2000; Hutt 1979; Robinson 1999). It is important to limit the number of questions. Whether the interview is more or less structured will depend on the specific application (Blackburn 2000).

To this end, a presentation was prepared during the planning stage. This was used to inform the participants about the purpose of the focus group. The structure planned for the focus group is shown in Table 4-1.

Table 4-1: Focus group structure

Item	Description
1.	Purpose, rationale and methodology of the study
2.	Identification of the most important factors for project selection
3.	Classification of factors
4.	Preliminary ranking of factors
5.	Identification of Delphi study participants

The literature survey during the planning stages identified the eleven factors important for the selection of renewable energy technologies listed in Table 4-2.

Table 4-2: Factors identified during the literature review

Quantitative factors	Qualitative factors
Economic measures Future savings in capital Operational and maintenance costs Profits Improvement in productivity	Political and senior management support Client and public support Environmental impact Technical and educational relevance Interface to existing projects Impact on project portfolio

Focus groups can consist of pre-existing groups if those groups have the expertise required (Bloor*, et al.* 2001). For this study, the existing group in the CSIR were

selected because these scientists all have interest in and experience of sustainable energy. In the literature there is little consensus on the size of a focus group with recommendations for the size of a focus group ranging from four to fifteen participants (Gibbs 1997), six to ten (Blackburn 2000), and up to fourteen (Ouimet, *et al.* 2004). Group sizes of more than eight become less manageable (Blackburn 2000). Focus groups can vary in size from three to fourteen participants and small groups can be an advantage if the topic is complex or when dealing with experts (Bloor, *et al.* 2001). It is important to choose a group of people that are not too heterogeneous so that participants will be comfortable in sharing their views (Gibbs 1997).

The existing Council for Scientific and Industrial Research (CSIR) group consisted of five individuals and knew each other from previous projects. Each of these individuals was contacted personally and asked to participate, and all five agreed. The arrangements were made at the beginning of December 2006 for the end of January 2007. This could explain the fact that only three individuals participated in the focus group in the end. December is a vacation period in South Africa and people often make new plans after the holidays without considering previous commitments.

The typical duration of a focus group can be one to two hours (Gibbs 1997 Robinson 1999) or 75 to 90 minutes (Ouimet, *et al.* 2004). The focus group in this study was scheduled for three hours. The focus group was semi-structured. An introduction was given by the moderator, participants were then allowed to discuss the parameters in the study, and a nominal group technique was then used to identify factors. The factors were classified and participants were asked to supply the names and contact details of possible participants for the Delphi study.

Some of the disadvantages, discussed above, can also be mitigated by using the nominal group technique in conjunction with the focus group technique (Ouimet, *et al.* 2004). The nominal group technique is a group meeting technique which is structured in such a way that participants silently generate ideas, after which these ideas are discussed by the group (Delbecq, *et al.* 1975). This ensures that all participants air their views and that the ideas of one participant do not dominate. This method was also used in this study.

The ethical standards of a focus group, in line with the requirements of the University of Pretoria (South Africa) were met. Full information on the purpose and objectives of the study were given to the participants beforehand (Gibbs 1997). It is important that focus group sessions are tape recorded to facilitate data analysis (Blackburn 2000; Gibbs 1997; Hutt 1979; Ouimet, *et al.* 2004; Robinson 1999) but permission must be obtained from the respondents before doing so (Hutt 1979). The confidentiality of the participants must also be ensured by not identifying individuals

in any publications (Blackburn 2000). The permission of the participants was obtained and the focus group session was tape recorded.

It is important that a facility is selected which is neutral to the group or if a pre-existing group exists, their regular meeting room can be used (Gibbs 1997). The focus group was held in a conference room at the CSIR in Pretoria, South Africa, as this was a place familiar to all participants.

4.3. Data gathering and analysis

4.3.1. Panel selection

Focus groups can consist of pre-existing groups if those groups have the expertise required (Bloor, *et al.* 2001).

As a pre-existing group existed in the CSIR it was decided to use this group to provide the first inputs for the study. All the members of the panel are involved in renewable energy projects in the CSIR. They are also part of the group which is involved in the NEPAD energy platform. The members of the panel were as shown in Table 4-3.

Table 4-3: Focus group participants

Name	Surname	Affiliation	Energy interest
Christelle	Beyers	CSIR, Built Environment	Sustainable human settlements
Thomas	Roos	CSIR, Defence, Peace, Safety and Security.	Renewable energy technology
Brian	North	CSIR, Material Science and Manufacturing	Clean coal technologies
Monga	Mehlwana	CSIR, Natural Resources and the Environment	Energy policy
Alan	Brent	CSIR, Natural Resources and the Environment	Sustainability of energy technologies

Christelle Beyers and Monga Mehlwena were unable to attend the session. This meant that the focus group consisted of 3 members.

4.3.2. Focus group session

The focus group session was structured as shown in Table 4-4.

Table 4-4: Focus group agenda

Item	Description	Duration	Responsible
1.	Purpose, rational and methodology of study	30 minutes	Marie-Louise Barry
2.	Identification of factors for technology selection	1 hour	All
3.	Classification of factors	1 hour	All
4.	Preliminary ranking of factors	30 minutes	All
5.	Identification of Delphi study participants	30 minutes	All

4.3.3. Purpose, rationale and methodology of the study

A previously prepared presentation included in Appendix A was presented to the focus group. The purpose of the presentation was to sketch the background to the study.

The focus group was tape recorded with the permission of the attendees. A list of summarised discussing points is given in Appendix B.

4.3.4. Identification of the factors for technology selection

The nominal group technique was used to identify factors to be considered when selecting renewable energy technologies in Africa. This technique was used rather than the interacting group technique. The nominal group technique produces better ideas as it does not inhibit the creative process (Delbecq, *et al.* 1975).

The focus group was conducted using a nominal group technique as follows.

Each participant was given six pieces of paper which would result in the generation of 18 factors. The participants were then asked to independently write down the six factors which in their opinion were the most important for the selection of renewable energy projects. The participants were asked to work independently and not discuss their ideas.

Before the participants started this task, however, the question was raised as to how a sustainable energy project is defined. Did it mean that projects would continue after implementation or did it mean that projects would have a triple bottom line, i.e. make a profit, be environmentally friendly, etc?

After this, each participant identified six factors. The pieces of paper where then taken in by the moderator. Each factor was discussed by the group and clarified. If what the participant wrote on the piece of paper was not clear, it was clarified. Any new factors that came out during the discussion were written down on a new piece of

paper and also classified. The factors were pasted on a white board and a preliminary classification of factors was done.

Once all 18 initial factors were discussed, participants were given the opportunity to write down independently any other factors which they felt had been overlooked. The same process of discussion, clarification and classification was then followed.

In conclusion, the researcher presented factors which she had identified from the literature. Those factors which had not yet been added and were deemed important by the participants were then added.

The final factors identified are as follows:

1. Maturity of technology – proven track record
2. End of life, exit strategy or decommissioning plan in place
3. Maintenance/support
4. Transfer of knowledge and skills
5. Create employment/ not eliminate jobs
6. Equity/ GIMI – income for more than one sector of the economy
7. Education – skills development
8. Empowerment for education
9. Local content (Labour component) Create industry
10. Regulatory financial incentive, tax regimes need to be supportive, institutional capacity
11. Does it fit under national priorities (Self evident? E.g. role of women)
12. Must contribute to and not detract from energy security
13. Environmental impact assessment
14. Available budget – the finances to support a project
15. Equity financing
16. Compliance for green funding
17. “Local Hero” – champion to continue after implementation
18. Passion/ ownership/ buy-in/ adoption by community, Responsibility
19. Ability to replicate (up-scaling)
20. Must match available resources (HR. natural, wind, solar, water, gas, geothermal etc) Infrastructure
21. Pilot study site selection issues
22. Resource beneficiation/ optimisation land, water etc.
23. Partnerships along the value chain
24. Efficient use of energy
25. Community engagement

26. Community acceptance (can traditional structures be accommodated?)
27. Society/Institution trust – see community acceptance
28. Specific local factors – resource availability, access to market, size and skills level of community
29. Must positively affect GDP at national level
30. Economic development (community eventually able to pay) economic sustainability
31. Ability to profitably sustain after funding ends
32. Synergies (salt production and desalinated water)
33. Add value to raw product
34. Community income generation
35. Proper project management
36. Training of personnel
37. Capacity
38. Financial capability

4.3.5. Classification of factors

During the identification a preliminary classification of factors was made by pasting the pieces of paper on the whiteboard in different clusters. To classify the factors, some of the clusters were combined. The following final classifications were decided on:

1. Technology factors
2. Social factors
3. Institutional regulatory factors (compliance)
4. Site selection factors
5. Economic/ Financial factors
6. Achievability by the specific organisations

4.3.6. Preliminary ranking of factors

For a first order indication of the importance of factors, the participants were then given five stickers numbered one to five and asked to stick them next to the factors which they felt were most important as shown in Table 4-5.

Table 4-5: Preliminary ranking of factors

Importance	Participant 1	Participant 2	Participant 3
1.	Regulatory financial incentive, tax regimes must be supportive, institutional capacity	Community engagement	
2.	Does it fit under national priorities (Self evident? e.g. role of women	Must match available resources (HR. natural, wind, solar, water, gas, geothermal etc) Infrastructure	Community income generation
3.	Ability to replicate (up-scaling)	Ability to profitably sustain after funding ends	
4.	Maintenance/Support	Local content (Labour component) Create industry	
5.	Create employment/ not eliminate jobs	Must contribute to and not detract from energy security	Synergies (salt production and desalinated water)

Because there were only three participants and a wide range of factors was identified by them as important, this was not the final answer but rather a preliminary indication of the importance of factors.

4.3.7. Identification of Delphi study participants

At the end of the session, each participant was given a sheet to complete in which they were asked to identify individuals whom they thought might be willing to participate in the Delphi study.

4.4. Conclusions and recommendations

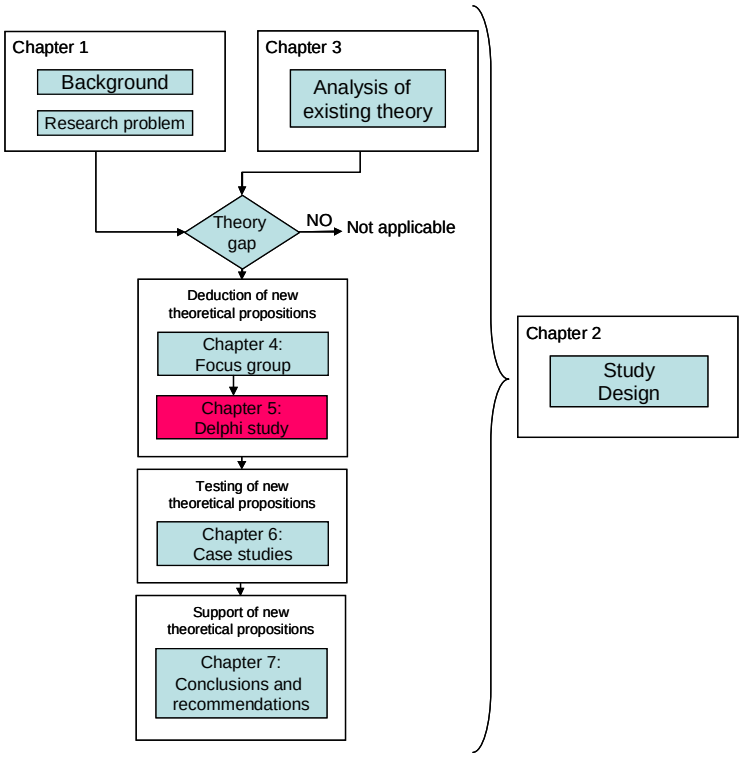
The thirty eight most important factors that need to be taken into account during the selection of energy technological systems in Africa were identified, categorised and rated. The eleven factors identified during the literature survey were expanded to thirty eight factors in the focus group. The categorised factors which were identified and which were used as an input to the Delphi study are shown in Figure 4-2.

Technology factors	***Social factors***	***Achievability by performing organisation***
Maturity of technology – proven track record End of life exit strategy or decommissioning plan in place Maintenance or support Transfer of knowledge and skills	Create not eliminate jobs Equity – income from more than one sector of the economy Education – skills development Empowerment for education Local content – labour component Create industry	Proper project management Training of personnel Capacity Financial capability
Site selection	***Institutional/ Regulatory factors (compliance)***	***Economic/ Financial factors (profit and return)***
Local hero – champion to continue after implementation Passion/ownership/buy-in/adoption by community/responsibility Replicability – can be up scaled Must match available resources (human, natural, infrastructure etc) Pilot study site selection Resource beneficiation/ optimisation land, water etc Partnerships along value chain Efficient energy use Community engagement Community acceptance – can traditional structures be accommodated Society/institutional trust Specific local factors-resource availability, market size, and skills level of community	Regulatory financial incentive, tax regimes must be supportive, institutional capacity Does it fit under national priorities (for example role of women) Must contribute to and not detract from energy security Environmental impact assessment Available budget-finances to support a project Equity financing Compliance for green funding	Must positively affect gross domestic product at national level Economic development (community eventually able to pay) economic sustainability Ability to profitably sustain after funding ends Synergies (for example salt production and desalinated water) Add value to raw product Community income generation

Figure 4-2: Categorised factors

The participants in the focus group also contributed names of 19 experts in the field of sustainable energy who would possibly take part in the subsequent Delphi study. The purpose of the Delphi study was to expand on the factors identified during the focus group in the first round and then to prioritise the most important factors during the second round.

Chapter 5: Delphi study



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5.1. Introduction

During the literature survey and focus group of this research study thirty eight factors were identified which should be taken into account when selecting renewable energy technologies in Africa.

In this Delphi study the objectives were to expand on the previously identified factors which need to be considered when selecting sustainable energy technologies for Africa, estimate the relative importance, feasibility and desirability of each factor to produce a prioritized list of factors, and to explore the underlying assumptions of judgements and reasons for disagreement between respondents.

The procedure followed in the Delphi portion of this study is shown in Figure 5-1.

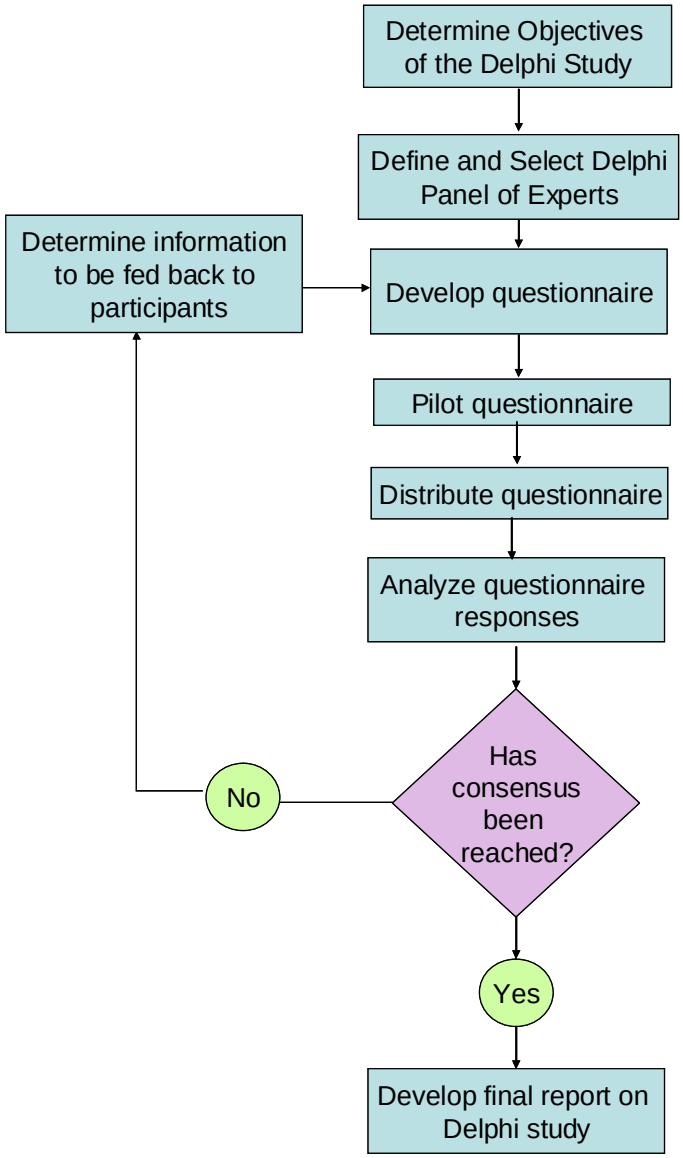

Figure 5-1: Suggested procedure for engineering and technology management research

The first step is to determine the detailed objectives of the Delphi study. This is followed by defining and selecting the Delphi panel of experts. The first round questionnaire is then developed and piloted. The questionnaire is distributed and the responses are analysed. If consensus has not been reached after the first round, information is extracted from the responses of the questionnaire that is then fed back to the respondents for consideration during the second round. The same process is repeated for the second and following rounds of the study. If consensus is reached after the end of a round, the final report on the Delphi study is developed.

The process that was followed is discussed in more detail.

5.1.1. Definition and selection of the panel of experts

A knowledge nomination worksheet approach was followed to select the respondents. The list of respondents is contained in Appendix C. A total of 62 respondents were identified during this phase. The last column in the Appendix C indicates who nominated the respondent. A reason why this person is suited to take part in this study is also given.

The main search categories are shown in Figure 5-2,

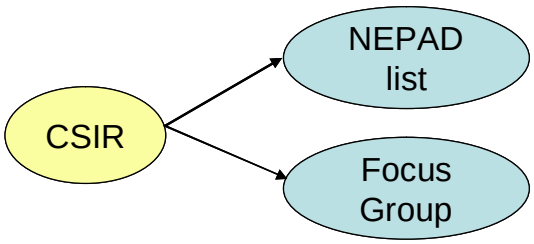

Figure 5-2: Search category CSIR

The focus group was conducted with CSIR personnel. Members of the focus group nominated respondents. The CSIR are in the process of corresponding with other researchers in the New Partnership for Africa's Development (NEPAD) on the topic of sustainable energy. The database of researchers was included in this study under the NEPAD list. The list was supplied by Alan Brent.

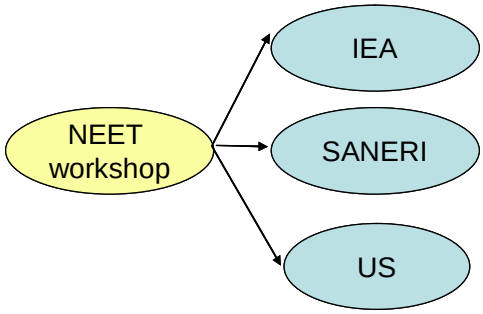

Figure 5-3: Search category NEET workshop

The researcher attended the South African Network of Expertise in Energy Technology (NEET) workshop on Energy Technology Collaboration on 20 February 2007 at the Sandton Convention Centre. Contacts were obtained there from the International Energy Agency (IEA), the South African National Energy Research Institute (SANERI) and Stellenbosch University.

Using the inputs from the information obtained from the CSIR and the NEET workshop, an internet search was done to identify further respondents. Other South African universities namely, the University of Cape Town (UCT), the University of the Witwatersrand (Wits) and the University of Johannesburg (UoJ) were found to have capabilities in sustainable energy.

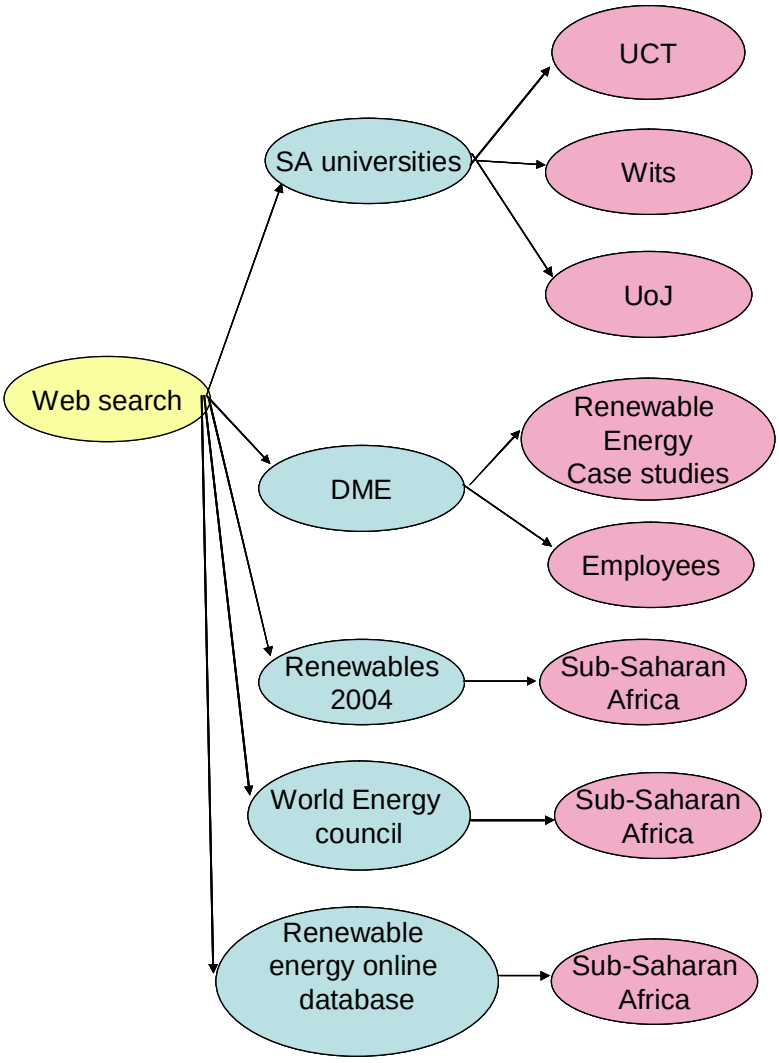

Figure 5-4: Search category Web search

The website of the Department of Mineral and Energy Affairs (DME) was investigated. Some of the employees of the DME were added and a list of sustainable energy case studies was found and the contact persons for these case studies were added to the list of respondents.

In searching for the details of some of the respondents identified by the focus group, three additional websites with relevant information were identified. The first was the website for Renewables 2004, International Conference for Renewable Energies which was held in Bonn from 1 to 4 June 2004. This website listed all delegates to the conference but without contact details. The country of origin of each delegate was given. A further web search was then undertaken to identify the contact details of delegates from Sub-Saharan Africa.

On the World Energy Council website, contact details of those who deal with projects in Sub-Saharan Africa were added to the list. The renewable online database is a database with the names of people worldwide who are involved in renewable energy projects. Once again the contact details of those working in sub-Saharan Africa were added to the list of respondents so as to compile a list of 62 suitable respondents who were then used for the first round of the Delphi study.

5.2. Data gathering process

The data gathering process used in this Delphi study is shown in Figure 5-5.

The factors identified from the focus group are used as an input for the generation of the first questionnaire, after which the questionnaire is piloted. In parallel to the questionnaire development, the characteristics of the participants are identified and possible participants are identified. The first round questionnaire is then administered and the data analysed. The second round questionnaire is then prepared using the analysed data from the first round questionnaire as an input. The second round questionnaire is piloted, administered and the data gathered is analysed. A decision is then made if another Delphi round is required. If another round is not required as was the case in this study, the final report is generated. In this study the final factors from the Delphi study were then used as an input to the case study.

5.2.1. Develop Questionnaire

The questionnaire was compiled using the factors identified during the focus group. The questionnaire was implemented in SurveyMonkey in such a way that the document in portable document format (PDF) could be sent to participants who do not have access to the Internet. The web-based survey meant that respondents entered their data directly into the SurveyMonkey database and as a consequence data capturing was not necessary, which cancelled out data capture errors.

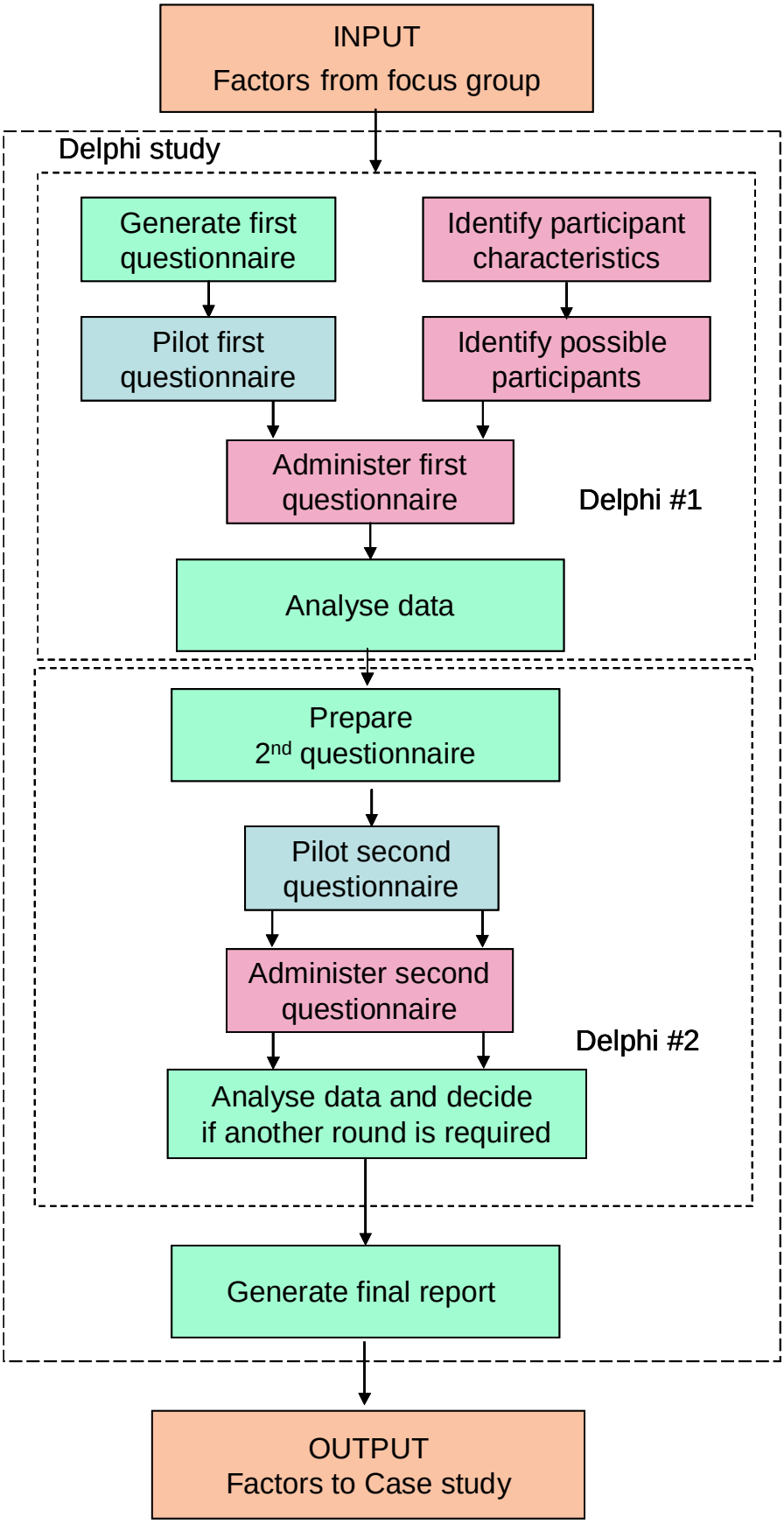

Figure 5-5: Delphi data gathering process

The questionnaire consisted of the following sections:

Rationale of the study. In this section the reason for the study, anonymity of respondents, study leaders, result distribution, number of rounds and time to complete the study were detailed.

Demographic information. This section captured the following demographic information on each respondent: e-mail address, geographical area, type of organisation, years of experience in the energy field, publications in the energy field, highest qualification, monetary value of projects, indemnity.

Introduction to Delphi cycle 1. The purpose of this section was to give the respondents a background on the questionnaire and how to complete it. The table to be used for evaluation of desirability, feasibility and importance was also presented here for the first time (see Table 5-3).

Section for each factor. Each factor was presented in its category namely, technology factors, social factors, institutional or regulatory factors, site selection factors, economic or financial factors, or factors in terms of achievability by specific organisation. The description of the factor categories, as obtained from the focus group, is given as shown in Table 5-1. The respondents were then given the opportunity to comment on the wording of the factors, place the factor in a different category if desired, evaluate the factors in terms of desirability, feasibility and importance which are defined in

Table 5-2 (a link is provided to Table 5-3) and motivate their reason for desirability, feasibility and importance of the factors.

Additional factors. For each category of factors, the respondents were given the opportunity to add four more factors if they wished. They were asked whether they wished to add more factors and if they responded positively, they were taken to a screen to enter an additional factor. If they answered negatively they were taken to the next factors. On the additional factor screen they were asked to enter the description of the additional factor, evaluate the factor in terms of desirability, feasibility and importance, and to motivate the desirability, feasibility and importance.

Participant motivation. On the penultimate screen of the survey, participants were asked how pertinent their answers were to the objective of the study, whether they were still motivated to continue, and whether the study would have value in their organisation.

End of survey. On the final screen of the survey, participants were asked to estimate the time taken to complete the survey, and to add any other comments they had on the study.

Table 5-1: Descriptions of categories

Category	Description
Technology factors	These factors are related to the maturity and complexity of the technological system.
Social factors	These factors relate to the community where the technological system will be implemented.
Institutional regulatory factors (compliance)	These factors relate to the applicable laws, regulations and government priorities.
Site selection	These factors related to the physical as well as people side of the site selection.
Economic/ financial factors (profit and return)	These factors relate to the economic and financial viability of implementing the technological system.
Achievability by the specific organisation	These are the factors which must be taken into account in terms of the specific organisation that will be implementing the technological system.

The rating method for factors as proposed by Jillson (1975) to rate objectives in a study on a national drug-abuse policy was used. Jillson (1975) proposes that three ratings namely feasibility, importance and desirability be used for rating. A detailed definition as shown in Table 5-3 was given to the participants to ensure that each participant used the same interpretation for each scale reference point. In essence feasibility relates to whether it is feasible and practicable to have the information required to investigate a factor available during the proposal phase; desirability relates to the benefit to the final outcome to consider the factor during the proposal phase; and importance relates to the priority which the factor should have for consideration during the proposal phase.

Table 5-2: Definition of Importance, Feasibility and Desirability

Evaluation measure	Definition
Feasibility	The feasibility of taking this factor into account during the selection of renewable energy technology, i.e., whether the information can be obtained and quantified.
Importance	The importance of the factor relates to the relevance of taking this factor into account during technology selection.
Desirability	The desirability of a factor relates to the benefit or advantage that the use of this factor will have for technology selection.

Table 5-3: Table for evaluating desirability, feasibility and importance of factors (Adapted from (Jillson, 1975))

Likert No	Desirability scale	Feasibility scale	Importance scale
1.	Highly desirable Factor has positive and little or no negative effect on success of implementation Factor justifiable on own merits	Highly feasible to gather information during proposal phase Minimum additional resource required No major political roadblocks in utilising this factor	Highly relevant. First order of priority Factor has direct bearing on major issues for technology selection Must be resolved dealt with or treated
2.	Desirable Factor has positive and minimum negative effect on success of implementation Factor justifiable in conjunction with other factors	Feasible to gather information during proposal phase Some additional resource required Some political roadblocks in utilising this factor	Relevant factor. Second order of priority Factor has significant impact on issues for technology selection Does not have to be fully resolved
3.	Neither desirable nor undesirable Factor has equal positive and negative effect on success of implementation Factor justifiable in conjunction with other desirable and highly desirable factors	Contradictory evidence that information can be gathered during proposal phase Increase in resource required Political roadblocks in utilising this factor	May be relevant factor. Third order of priority Factor may have impact on issues for technology selection May be a determining factor to a major factor
4.	Undesirable Factor has little or no positive effect on success of implementation Factor may be justifiable in conjunction with other highly desirable factors	Some indication that information cannot be gathered during proposal Large scale increase in resource required Major political roadblocks in utilising this factor	Factor insignificantly relevant. Low order of priority Factor has not impact on issues for technology selection Not a determining factor to a major factor
5.	Highly undesirable Factor has major negative effect on success of implementation Not justifiable	Information required cannot be gathered during proposal phase Unprecedented allocation of resources required Politically unacceptable	Factor not relevant. No priority Factor has no impact on issues for technology selection Factor should be dropped

5.2.2. Pilot study

The questionnaire for the pilot round of the survey (referred to as Delphi #1) is given in Appendix D.

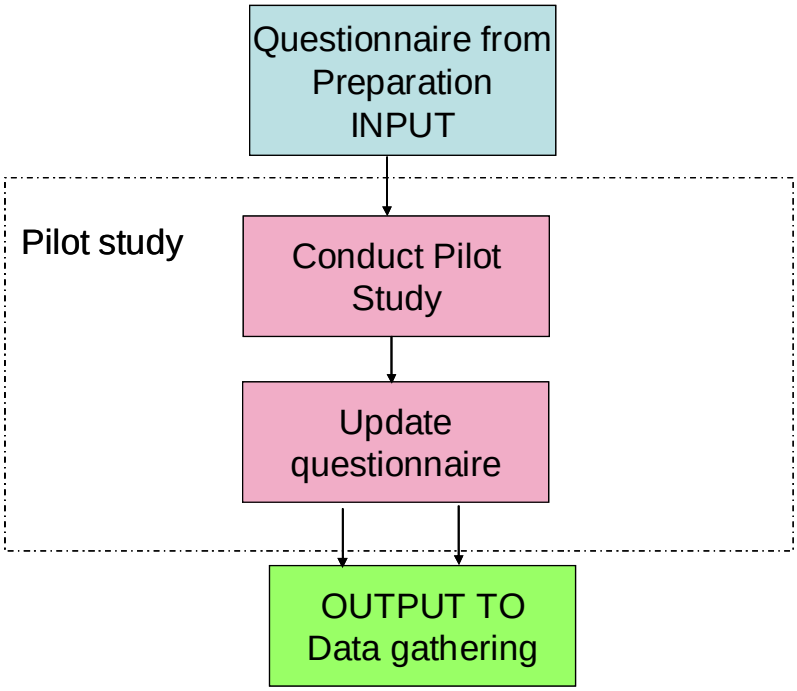

Figure 5-6: Steps in the pilot study

The pilot study was launched on 5 June 2007. The survey was sent to four respondents. The two study leaders had already given input to the study during the BETA 1 to 4 iterations of the survey questionnaire. The BETA 5 iteration of the questionnaire was sent to the pilot panel. Three of the respondents completed the survey online and one respondent completed the paper-based version.

For purposes of the pilot study the survey was changed to allow respondents the opportunity to comment on each page.

The results of the pilot study and the changes made to the questionnaire are contained in Appendix E.

5.2.3. First round Delphi

5.2.3.1. Data gathering

The steps followed during the data gathering process are shown in Figure 5-7.

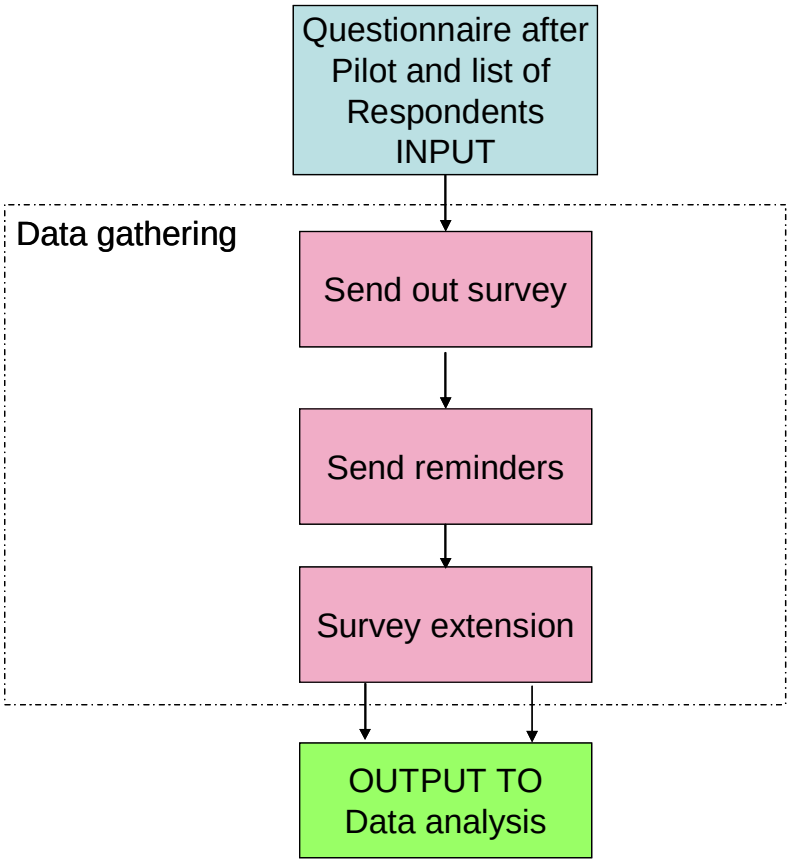

Figure 5-7: Steps in the data gathering process

The survey was sent out on 1 October 2007 using the SurveyMonkey collection tool. In this tool one enters the names of the respondents and then one composes an e-mail which is subsequently sent to all the respondents. The total list of 62 respondents was entered. The e-mails of 11 recipients bounced back. This meant that they were not able to complete the survey, which brought the list of respondents down to 51. The respondents who did not receive the survey are indicated with an asterisk (*) in Appendix C. All the correspondence is shown in Appendix F.

A copy of the survey is shown in Appendix G. Only one of the factors is shown as each of the factors has exactly the same information.

Regular reminders were sent every week during the study. The reminders were sent out on 8 October, 15 October and 18 October. By the closing date, only three respondents had participated. Personal reminders were then sent out to the NEPAD participants by one of the study leaders. Reminders were sent to those respondents who had started the survey and not completed it. Finally an extension to the survey was created and sent out to all the selected respondents. The PDF version of the survey was also sent this time with instructions as to how to fax back the results. By 30 October, more than 7 respondents had answered the questions; only the last question had 6 respondents.

5.2.3.2. Data analysis Delphi #1

The survey was started by 17 respondents. All these respondents supplied the demographic information required. The number of respondents in each section is shown in Table 5-4.

Table 5-4: Number of respondents per section

Respondent ID	Demo-graphics	Category evalua-tion	Factor Evalua-tion	Techno-logy factors	Social Factors	Institutional factors	Site Selection factors	Economic factors	Achievability factors	Participant motivation	End of survey
No of Respondents	17	6	11	8	7	7	7	7	6	5	4

Demographic information

As stated above, 17 respondents supplied demographic information. In the analysis of this information, only those respondents who continued with the study were analysed. The respondents who completed the first four sections were analysed. This entailed 11 respondents.

The geographical region of the respondents is shown in Figure 5-8.

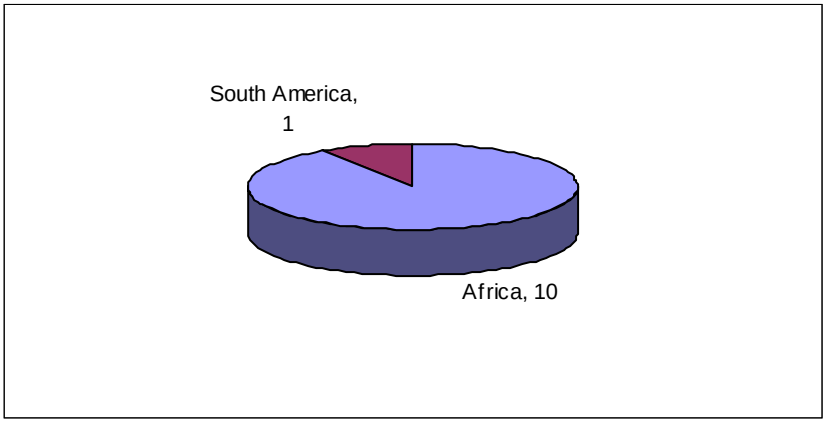

Figure 5-8: Number of respondents per region

As indicated in Figure 5-8, 10 of respondents are from Africa and only one from South America. Since the focus of the study is Africa, this is acceptable. Africa and South America are both seen as third world continents, so the respondent from South America can share lessons learned in this continent, which will also be applicable to Africa.

The respondents were asked to select one of the following types of organisation:

- Donor agency
- Research organisation/ university
- Government

- Project developers/implementer
- Energy (electricity)
- Technology company (fuel cells, PV supplier etc.)
- Multi-lateral institution (NEPAD, EU, SADC)
- Other (please specify)

Two of the participants who selected “other” indicated that they worked in an energy consultancy and one indicated a petrochemical company (Figure 5-9). As can be seen from the figures, the respondents are well distributed among the different types of organisations, with no type of organisation dominating.

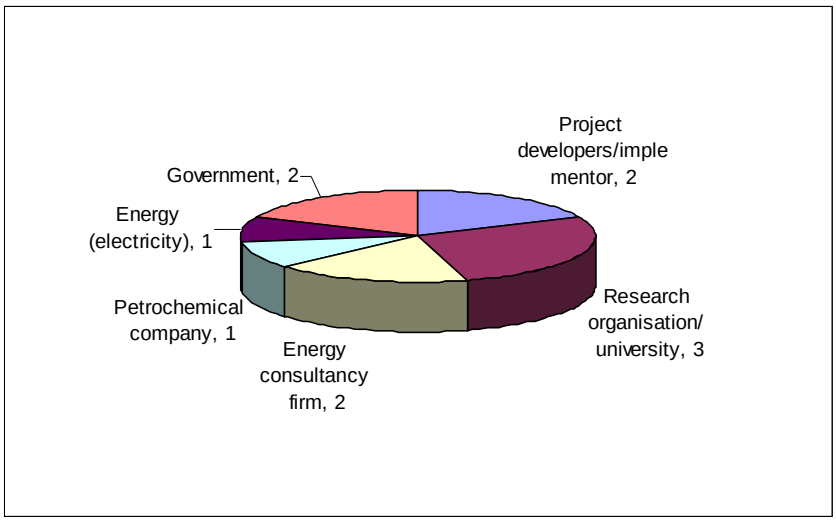

Figure 5-9: Number of respondents per type of organisation

The total years of experience came to 201, with an average of 20.5, a minimum of 10 and a maximum of two. This meant that the respondents had significant experience in the field of renewable energy.

Respondents were asked how many publications they had in the field of energy. Publications included journal papers, conference papers and books. Three respondents did not answer this question with one indicating that he/she had lost count. Of the nine respondents who did respond, the total number of publications is 373, the average 41.5, the minimum 3 and the maximum 135. This indicated that the panel is by and large respected by their peers in the field.

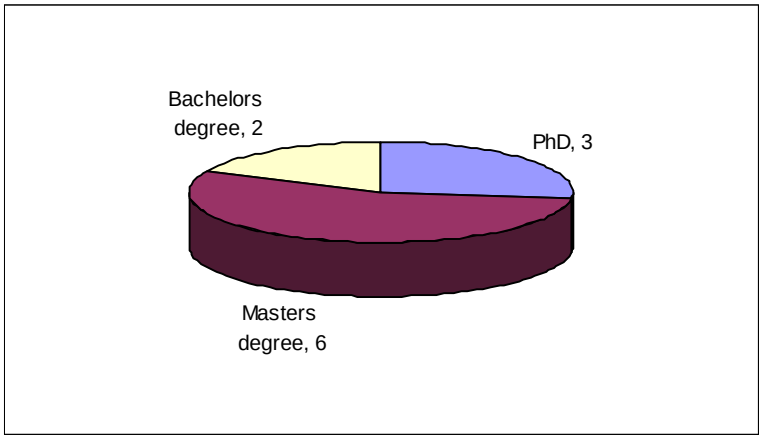

Figure 5-10: Number of respondents per qualification

The respondents were asked to indicate their highest qualification. The options given were as follows:

- PhD
- Masters degree
- Bachelors degree
- Graduate diploma
- Other (please specify)

One respondent selected "other", his/her qualification is Dipl.Ing. Mechanical (German). This has been equated to a bachelor's degree as the German methods of awarding qualifications differ from those in Africa.

Only ten of the respondents answered the question relating to the monetary size of the project in which they were involved. The projects of the respondents varied from four of the respondents being responsible for projects between $1 million to $ 10 million to one respondent having projects of more than $1 billion as shown in Figure **5-11**.

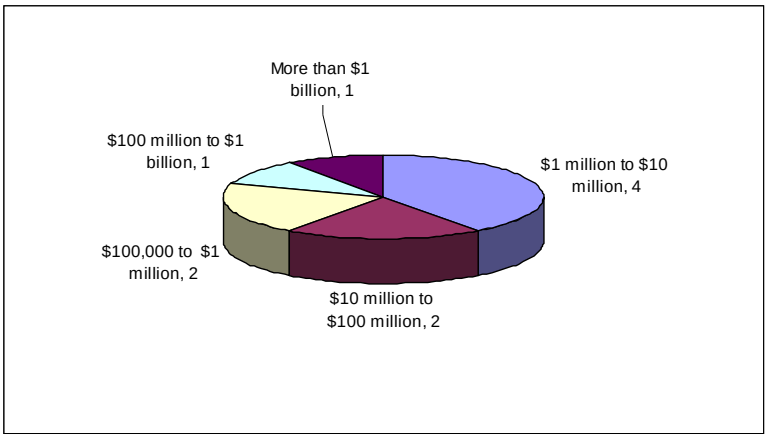

Figure 5-11: Number of respondents for size of project determined by cost

Categories and categorisation of factors

The analysis of the categorisation of factors is included in Appendix H. The descriptions of Table 5-1 were refined and the final descriptions are shown in Table 5-5. The final categories for factors are shown in Table 5-6.

Table 5-5: Category descriptions

Category	Description
Technology factors	These factors are related to the maturity, accessibility, adaptability and complexity of the technological system."
Social factors	These factors relate to the community where the technological system will be implemented
Institutional/ regulatory factors	These factors relate to the applicable laws, regulations and government priorities as well as regulation of donor agencies
Site selection factors	These factors are related to the physical (including infrastructure) as well as people side of the site selection
Economic/ financial factors	These factors relate to the economic and financial viability of implementing the technological system, this includes a good IRR as well as availability and access to financing and life cycle costs
Achievability by specific organisation factors	These are the factors that must be taken into account in terms of the specific organisation that will be implementing the technological system."

Table 5-6: Final categories for factors

Category	Description
Technology factors	Maturity or proven track record of technology in the world Ease of maintenance and support over the life cycle of the technology Ease of transfer of knowledge and skills to relevant people in Africa Synergy of technology with other available technologies Replicability (i.e. the possibility of up scaling) Must match available resources

Category	Description
Social factors	Create employment/ not eliminate jobs Share holding equity – income for more than one sector of the economy Local labour used and new industries created
Institutional/ regulatory factors	Degree of environmental impact of the technology Does it fit under national priorities? Must contribute to, not detract from national energy security Positive EIA Compliance for green funding
Site selection factors	Local champion to continue after implementation Adoption by community Suitable site readily available for pilot studies
Economic/ financial factors	Existence of tax and other financial incentives Availability of finance Possibility of equity financing by local partners Implementation of technology must be profitable Economic development Synergy with other types of projects Reliability of energy supply in the African context
Achievability by specific organisation factors	Project Management Human resource capacity Technological capacity Financial capacity Political capacity

Factor evaluation

The detailed evaluation of each factor is shown in Appendix H. The detailed calculations for the means for feasibility, desirability and importance can also be found in Appendix H.

The means of all the factors for feasibility, desirability and importance have been summarised in Table 5-7. The factors are also ranked. The factors are ranked first according to feasibility. If a factor is not feasible it does not matter whether it is desirable and important. The factors are then sorted according to desirability and then importance.

Table 5-7: Factors sorted according to feasibility, desirability and importance

1st round factor ID	1st round factors	Feasibility	Desirability	Importance
T2	Ease of maintenance and support over the life cycle of the technology	1.56	1.78	1.56
SS3	Suitable site readily available for pilot studies	1.71	1.71	1.43
I7	Compliance for green funding	1.71	1.86	2.29
T1	Maturity or proven track record of technology in the world	1.78	1.78	1.89
I4	Positive EIA	1.86	1.71	1.57
T5	Reliability of energy supply in the African context	1.89	1.78	1.56
T4	Degree of environmental impact of the technology	1.89	2.00	1.56
A1	Project Management	2.00	1.50	1.67
A2	Human resource capacity	2.00	1.67	1.67
I5	Availability of finance	2.00	1.71	1.71
T8	Must match available resources	2.11	1.67	1.67
I3	Must contribute to, not detract from national energy security	2.14	1.86	1.86
SS1	Local champion to continue after implementation	2.14	1.71	2.00
T3	Ease of transfer of knowledge and skills to relevant people in Africa	2.22	1.89	1.78
E1	Implementation of technology must be profitable	2.29	1.71	1.57
SS2	Adoption by community	2.29	1.71	1.71
I2	Does it fit under national priorities	2.29	1.86	2.14
S1	Create employment/ not eliminate jobs	2.43	2.14	2.43
A5	Political capacity	2.50	1.83	1.67
T7	Replicability (i.e. the possibility of up scaling)	2.56	2.11	2.00
S3	Local labour used and new industries created	2.57	1.71	1.57
I1	Existence of tax and other financial incentives	2.57	1.57	1.71
A4	Financial capacity	2.67	1.83	1.50
A3	Technological capacity	2.67	2.17	2.00
T6	Synergy of technology with other available technologies	2.67	1.89	2.11
E2	Economic development	2.71	2.14	2.29
I6	Possibility of equity financing by local partners	2.71	1.71	2.43
E3	Synergy with other types of projects	2.83	2.50	2.33
S2	Share holding equity – income for more than one sector of the	3.00	2.00	2.57

The factors were prioritised and are discussed in more detail below using the scoring system shown in Table 5-8 (Jillson, 1975).

Table 5-8: Scoring system for prioritisation (Jillson, 1975)

Mean value	Desirability scale	Feasibility scale	Importance scale
Less than 1.8	Highly feasible	Highly desirable	Highly important
Less than 2.6 and equal to or greater than 1.8	Feasible	Desirable	Important
Less than 3.4 and equal to or greater than 2.6	Neither feasible nor infeasible	Neither desirable nor undesirable	Neither important nor unimportant
Less than 4.2 and equal to or greater than 3.4	Infeasible	Undesirable	Unimportant
Less than 4.2	Highly infeasible	Highly undesirable	Highly unimportant

No factors were rated to be of indeterminate importance or indeterminate desirability, infeasible, highly infeasible, undesirable, highly undesirable, unimportant or highly unimportant.

A summary of the number of factors that were rated highly feasible is shown in terms of desirability and importance in Table 5-9. No factors were rated to be of indeterminate importance or indeterminate desirability.

Table 5-9: Summary of desirability and importance ratings for highly feasible factors

	Highly important	Important	Indeterminate importance
Highly desirable	3	1	0
Desirable	0	1	0
Indeterminate desirability	0	0	0

The highly feasible factors with high desirability, high importance or importance are shown in Table 5-10. Two technology factors and two site selection factors are included in this table. The information for SS4 however, is based on the evaluation of only one respondent as this is a newly added factor.

Table 5-10: Factors rated highly feasible, highly desirable, highly important or important

Factor No	Factor description
SS3	Suitable site readily available for pilot studies
SS4	Access to suitable sites can be secured
T1	Maturity or proven track record of technology in the world
T2	Ease of maintenance and support over the life cycle of the technology

A summary of the number of factors which were rated feasible is shown in terms of desirability and importance in Table 5-11. No factors were rated to be of indeterminate importance or indeterminate desirability.

Table 5-11: Summary of desirability and importance ratings for feasible factors

	Highly important	Important	Indeterminate importance
Highly desirable	1	1	0
Desirable	3	4	0
Indeterminate desirability	0	0	0

The feasible factors with high desirability, high importance, desirability or importance are shown in Table 5-12. These factors are evenly distributed amongst the factor categories.

Table 5-12: Factors rated feasible, highly desirable, highly important, desirable or important

Factor No	Factor Description
A1	Project Management
A2	Human resource capacity
E1	Implementation of technology must be profitable
E4	Reliability of energy supply in the African context
E5	Existence of tax and other financial incentives
E6	Availability of finance
I1	Does it fit under national priorities
I2	Must contribute to, not detract from national energy security
I3	Positive EIA
S1	Create employment/ not eliminate jobs
S3	Local labour used and new industries created
SS1	Local champion to continue after implementation
SS2	Adoption by community
T5	Replicability (i.e. the possibility of up scaling)
T6	Must match available resources

A summary of the number of factors that were rated neither feasible nor infeasible is shown in terms of desirability and importance in Table 5-13.

Table 5-13: Summary of desirability and importance ratings for factors with indeterminate feasibility

	Highly important	Important	Indeterminate importance
Highly desirable	0	1	0
Desirable	1	6	0
Indeterminate desirability	0	0	0

The feasibility of six factors was indeterminable. The reason for this was either that some respondents rated the factor feasible while others rated it infeasible and those that are truly indeterminate as the modal response are neither desirable nor undesirable. The distribution of these indeterminable factors are shown in Table 5-14.

Table 5-14: Distribution of indeterminable factors

Factors indeterminate in terms of feasibility		Very high	High	Indetermir	Low	Very low	Mode
A2	Human resource capacity	0.0%	50.0%	25.0%	25.0%	0.0%	2
I4	Compliance for green funding	0.0%	25.0%	62.5%	12.5%	0.0%	3
S2	Share holding equity – income for more than one sector of the economy	0.0%	0.0%	100.0%	0.0%	0.0%	3
E7	Possibility of equity financing by local partners	0.0%	12.5%	62.5%	25.0%	0.0%	3
A5	Political capacity	0.0%	62.5%	62.5%	25.0%	0.0%	3
Factors indeterminate in terms of importance							
S2	Share holding equity – income for more than one sector of the economy	12.5%	12.5%	62.5%	12.5%	0.0%	3

Pertinence of responses, motivation of respondents and value to organisations

The participants were asked to comment on the pertinence of their answers to the questions, their motivation to continue with the survey and whether the results of the survey would be valuable to their organisation. The detailed results are contained in Appendix H.

The aims of the study, namely, to develop a generic set of factors for technology selection, were not expressed clearly enough. This was rectified in the next round. Most of the respondents answering the question were prepared to continue with the study. The respondents felt that the information obtained would add value in their organisations

End of Survey

In this section, the respondents were asked the average time that they took to complete the survey and they were given the opportunity to add any other comments they wanted.

The average time to complete the survey was 61.6 minutes, which is 1.6 minutes longer than what was indicated.

Table 5-15: Other comments made by the respondents on the study

	Other comments
1.	THIS STUDY IS CAPABLE OF MOVING AFRICA OUT OF ABJECT POVERTY.
3.	Unfortunately I have little time to elaborate on open questions.

Conclusion

The information gathered in the first round Delphi was processed. The analysis was presented to the respondents in the second round as is discussed in paragraph 5.2.4.

5.2.4. Second round Delphi

5.2.4.1. Introduction

In the second round of the survey (Delphi #2) respondents were given all the factors in Table 5-7 in the current ranking order and were then asked to rank the factors using a 5 point Likert scale. Respondents were asked whether they wanted to comment on the wording or descriptions of the factors. All the respondents were finally asked to supply information on possible sites for case studies that would be conducted to verify the factors.

5.2.4.2. Preparation of Questionnaire

The questionnaire was compiled using the factors identified during Delphi #1 and shown in Appendix I. The questionnaire was implemented in SurveyMonkey in such a way that the document in portable document format (PDF) version could be sent to respondents who do not have access to the internet. The web-based survey meant that respondents entered their data directly into the SurveyMonkey database and consequently data capturing was not necessary, which cancelled out data capture errors. The questionnaire consisted of the following sections:

Introduction. In this section the purpose of the study was stated again, a link was made available for respondents to access the report on the Delphi #1 results, the estimated duration for completing the questionnaire was given and the date by which the questionnaire had to be completed was given. According to the ethical requirements of the University of Pretoria, respondents were then informed that the information they supplied would be treated confidentially and that the results would be published. Respondents were then given the opportunity to opt out of the study if they wished.

Demographic information. This section captured the following demographic information of each respondent: geographical area, type of organisation, years of experience in the energy field, publications in the energy field, highest qualification, monetary value of projects.

Factor evaluation. The factors were presented first in terms of feasibility, then in terms of desirability followed by importance. The same description for the rating of each category on a five point Likert scale, was used as in Delphi #1. Respondents could click on each factor to obtain the report on the results of Delphi #1. After the factor evaluation, respondents were asked if they wished to comment on the factor description wording. If they responded with “yes” they were taken to the section to comment. If they responded with “no”, they were taken to the final comments.

Comments on factors and descriptions. In this section, the wording of each factor as well as the wording of the description of each factor was presented to the respondents. Respondents were given the opportunity to comment on both.

Final comments. On the penultimate screen of the survey, participants were asked how long it had taken them to complete the survey and to enter any further comments on the study. The next phase of this study involved a case study to validate the factors identified during the focus group and Delphi study. For this reason, respondents were asked to recommend suitable sites for the case study.

End of survey. This section expressed thanks to the respondents for their participation.

5.2.4.3. Pilot study

A pilot study was done with four respondents. The respondents were the study leaders and two members of the Department of Statistics at the University of Pretoria. The pilot study was sent out on 20 November 2007. Positive feedback was obtained on the Delphi #2 questionnaire, especially because the time to complete had been reduced from 2 hours to 15 minutes. The pilot respondents were also of the opinion that respondents would be able to complete the survey in that time. No changes were recommended and the same questionnaire was used for the final Delphi #2 survey.

5.2.4.4. Data gathering

The survey was sent out using the e-mail facility on SurveyMonkey. The survey was sent to all the respondents (50) who had previously received the survey except for one respondent who had indicated in the Delphi #1 that he did not wish to receive further survey questionnaires. A different covering letter was used for each of the following categories of respondents: respondents who had completed the Delphi #1 survey (8), respondents who had started but not completed the Delphi #1 survey (8) and respondents who had not started with the Delphi #1 survey (34). The correspondence is attached in Appendix J.

The first e-mail was sent out on 21 November 2007. Respondents were requested to complete the survey before 1 December 2007. Reminders were sent to all respondents on 26 and 27 November 2007. Only 10 responses were received by 1 December 2007 of which only five were completed.

As the respondents of the survey are dispersed in Africa and South America and telephone numbers were not available for all the recipients, it was not possible to contact all the respondents telephonically. One of the study leaders knew some of the respondents outside South Africa and he sent all these respondents an e-mail requesting them once again to complete the survey. The researcher telephoned the respondents in South Africa for whom telephone numbers were available.

By 12 December 2007, 15 responses were received of which eight respondents completed the survey. The amount of respondents that answered each section is shown in Table 5-16.

Table 5-16: Number of respondents per section for Delphi #2

	Demographic information	Factor evaluation	Comments on factors and descriptions	Final comments	Case study information	Completed Delphi #1
No of respondents	13	8	0	9	6	6

This translates to a response rate of 16% (using a sample size of 50) for the factor evaluation part of the questionnaire. During the data analysis only the responses of the eight respondents who had completed the survey were utilised. Six of the respondents who participated in Delphi #1 also started with Delphi #2 but only four of these respondents completed the survey. It is not clear what the contact details of the respondents marked with a question mark are as these respondents used the link sent via e-mail to respond and not the SurveyMonkey link. The result was that SurveyMonkey could not track the identities of these respondents.

5.2.4.5. Data analysis

Demographic information

The geographic region of the respondents is shown in Figure 5-12. As in Delphi #1 the majority of respondents are from Africa with the one respondent from South America participating once again.

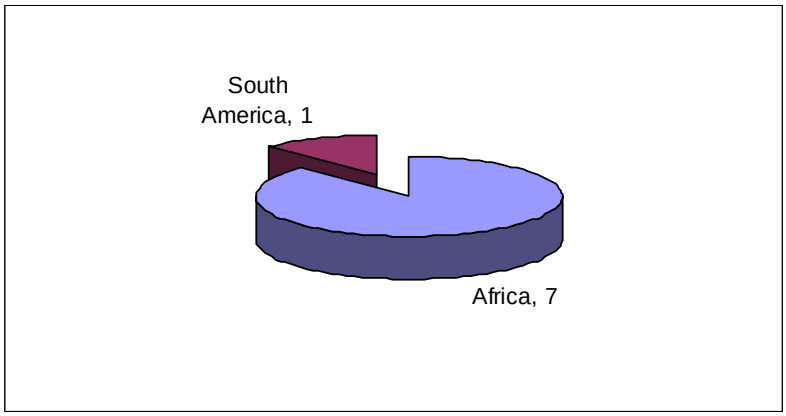

Figure 5-12: Number and percentage of respondents per geographical region

For Delphi #2 in terms of level of implementation, there was a 50/50 split in terms of macro and micro level implementation as shown in Figure 5-13.

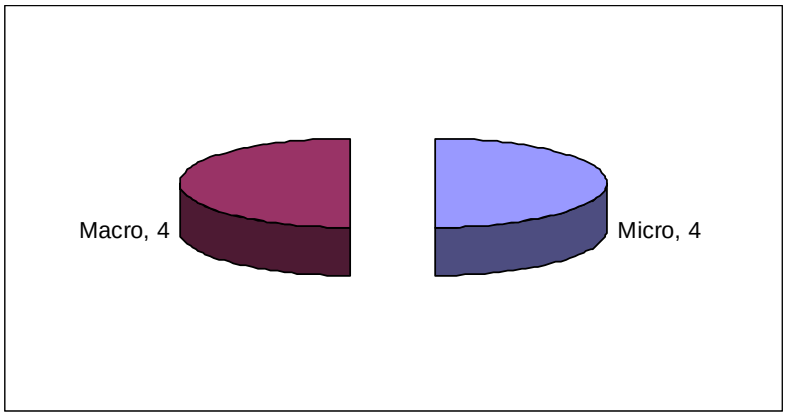

Figure 5-13: Number and percentage of respondent in terms of level of implementation

The distribution of the types of organisations in which the respondents operate, changed to the distribution shown in Figure 5-14. When compared to the results of Delphi #1, the number of respondents from research organisations or universities had increased by one as well as the number of respondents from energy suppliers. The one petrochemical company, two government organisations and two project developers/ implementers are no longer represented.

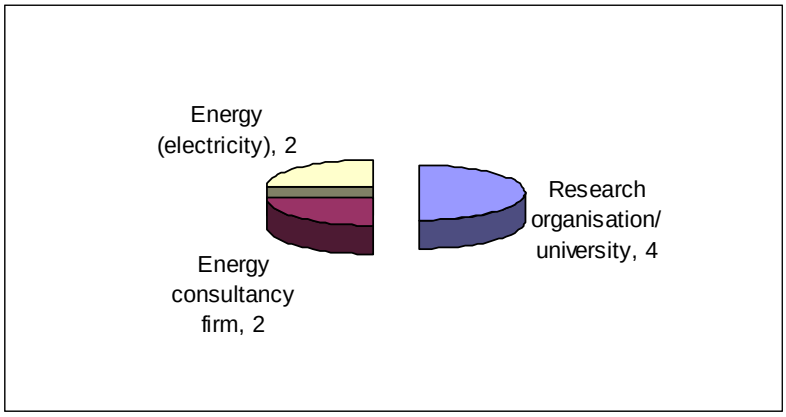

Figure 5-14: Number of respondents per type of organisations

The respondents were asked how many years experience they had in the energy field. The total years of experience came to 181, with an average of 22.6, a minimum of 10 and a maximum of 32. This meant that the Delphi #2 respondents had more experience than the Delphi #1 respondents.

Respondents were asked how many publications they had in the field of energy. Publications included journal papers, conference papers and books. Of the eight respondents who did respond, the total number of publications was 239, the average 28.8, the minimum 10 and the maximum 70. This indicated that the panel was by and large respected by their peers in the field.

The distribution of the qualifications of the respondents is shown in Figure 5-15 and this indicates an increase of one in PhDs and a decrease of two in Masters degrees when compared to Delphi #1.

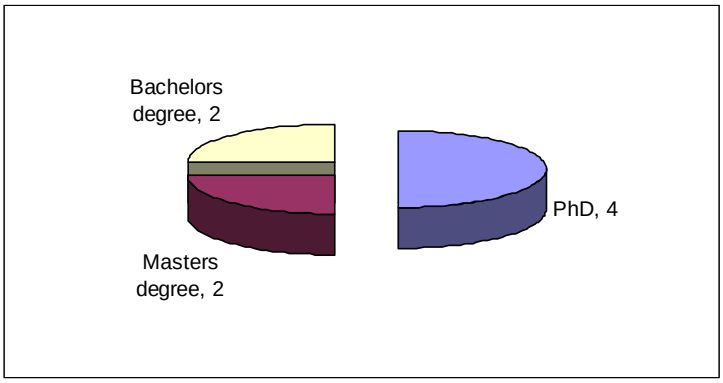

Figure 5-15: Number of respondents per qualification

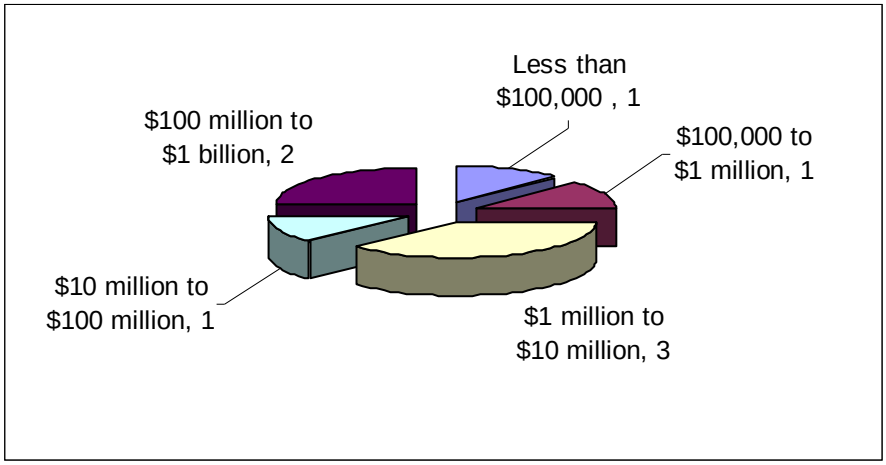

Figure 5-16: Number of respondents for size of project determined by cost

The monetary value of typical energy-related projects undertaken by the respondents changed in Delphi #2 when compared to Delphi #1. This change is shown in Table 5-17. The monetary value of the projects undertaken by the organisations in the Delphi #2 decreased from those in Delphi #1.

Table 5-17: Change in monetary value of projects respondents are involved in from Delphi #1 to Delphi #2

Monetary value	Delphi #1	Delphi #2
Less than $100,000	0	1
$100,000 to $1 million	2	1
$1 million to $10 million	4	3
$10 million to $100 million	2	1
$100 million to $1 billion	1	2
More than $ 1 billion	1	0

Factor evaluation

The factors in the questionnaire were listed in the order as prioritised at the end of Delphi #1. Respondents rated each factor on the same Likert scale as during Delphi #1. The prioritised list of factors as obtained from the Delphi #2 first in terms of feasibility, then desirability followed by importance is shown in Table 5-18. The smaller the value of the mean, the more feasible, desirable or important the factor is.

Table 5-18: Delphi #2 factors with mean values for feasibility, desirability and importance

Number	Factor Description	Feasibility	Desirability	Importance
T2	Ease of maintenance and support over the life cycle of th	2.00	1.00	1.25
T6	Must match available resources	2.25	1.88	2.13
SS1	Local champion to continue after implementation	2.25	1.38	1.38
I2	Must contribute to, not detract from national energy secu	1.88	1.88	1.75
T3	Ease of transfer of knowledge and skills to relevant peop	2.25	1.75	1.50
E1	Implementation of technology must be profitable	2.50	1.75	2.00
SS2	Adoption by community	2.38	1.63	1.75
I1	Does it fit under national priorities	2.13	2.00	1.88
S1	Create employment/ not eliminate jobs	2.25	1.50	2.13
A5	Political capacity	3.13	2.00	2.25
T5	Replicability (i.e. the possibility of up scaling)	2.13	1.75	2.00
SS3	Suitable site readily available for pilot studies	2.00	1.63	1.75
E5	Existence of tax and other financial incentives	2.38	2.38	2.13
S3	Local labour used and new industries created	2.25	1.50	2.00
A4	Financial capacity	2.50	1.75	1.50
T4	Synergy of technology with other available technologies	2.00	1.75	1.88
A3	Technological capacity	2.25	1.25	1.50
E7	Possibility of equity financing by local partners	3.13	1.88	2.50
I4	Compliance for green funding	2.88	2.25	2.38
E2	Economic development	2.13	1.50	1.63
E3	Synergy with other types of projects	2.38	1.88	2.00
S2	Share holding equity – income for more than one sector	3.00	2.13	2.75
T1	Maturity or proven track record of technology in the worl	2.13	1.63	2.13
SS4	Access to suitable sites can be secured	2.13	1.63	1.63
I3	Positive EIA	2.38	1.75	2.00
E4	Reliability of energy supply in the African context	2.25	1.50	1.88
I5	Degree of environmental impact of the technology	2.50	1.75	2.13
A1	Project Management	2.13	1.38	1.38
A2	Human resource capacity	2.75	1.50	1.25
E6	Availability of finance	2.50	1.63	1.75

The scoring system shown in Table 5-8 was used to prioritise the factors (Jillson, 1975).

The rating scale of the feasibility, importance and desirability was the same as for the first round Delphi. None of the factors identified in this study was found to be highly feasible. This is of concern, as feasibility is related to how easily the information required to evaluate a factor can be obtained during technology selection. None of the factors was found to be infeasible or highly infeasible.

A summary of the desirability and importance ratings of the factors which scored feasible is shown in Table 5-19.

Table 5-19: Summary of desirability and importance ratings for feasible factors

	Highly important	Important	Indeterminate importance
Highly desirable	11	9	0
Desirable	1	4	
Indeterminate desirability	0	0	0

The eleven most important factors as identified during the Delphi study are shown in Figure 5-17.

Achievability by performing organisation Project management Technological capability Financial capacity	***Economic*** Contribution to economic development Availability of finance
Site selection Suitable sites for pilot studies Local champion Adoption by community Access to suitable sites can be secured	***Technology*** Ease of maintenance and support Ease of transfer of knowledge and skills

Figure 5-17: Eleven most important factors identified in the Delphi study

The feasibility of five factors and the importance of one factor were indeterminable. The reason for this was either that some respondents rated the factor feasible while others rated it infeasible and those that are truly indeterminate as the modal response are neither desirable nor undesirable. The distributions of these indeterminable factors are shown in Table 5-20.

Table 5-20: Distributions of indeterminable factors

Factors indeterminate in terms of feasibility		Very high	High	Indetermin	Low	Very low	Mode
A2	Human resource capacity	0.0%	50.0%	25.0%	25.0%	0.0%	2
I4	Compliance for green funding	0.0%	25.0%	62.5%	12.5%	0.0%	3
S2	Share holding equity – income for more than one sector of the economy	0.0%	0.0%	100.0%	0.0%	0.0%	3
E7	Possibility of equity financing by local partners	0.0%	12.5%	62.5%	25.0%	0.0%	3
A5	Political capacity	0.0%	62.5%	62.5%	25.0%	0.0%	3
Factors indeterminate in terms of importance							
S2	Share holding equity – income for more than one sector of the economy	12.5%	12.5%	62.5%	12.5%	0.0%	3

Comments on factors and descriptions

Respondents were given the final opportunity to comment on the wording of the factors and their descriptions. None of the respondents opted to comment and it was assumed that the wording and descriptions of the factors were acceptable.

Final comments

The average time to complete the survey was 19 minutes with a minimum of 10 and a maximum of 30. This is 4 minutes more than the estimate that was made during the pilot study.

Final comments on the study were as shown in Table 5-21.

Table 5-21: Respondent comment on the study as a whole

Respondent ID	Comment
1.	I found the survey somewhat confusing to complete, as there was insufficient up front information to tell me more about the way in which factors would be used and the purpose of the ratings. Are why trying to select which factors will be applied in selecting projects, and to provide some information to help rank these factors? I think a better intro would help, or perhaps a discussion with the researcher prior to completing the survey. Also note that the order (feasibility, desirability, importance listed on the survey is different to that given in the table which describes the rankings. This may have led to confusions/inadvertent errors by those completing the survey. If the researcher does wish to discuss this with me, I would be happy to discard this version and repeat the exercise (but now better informed)
2.	At face value many of the factors seem similar or to overlap. Therefore it actually required some time to consider the actual definitions of the factors.
4.	None
5.	Took longer because clicking on a link to a factor to read about it led to loss of completed entries on section 3. These had to be re-entered
8.	None

The following sites for suitable case studies were identified during the second round Delphi by the respondents:

(i) NuRa concession rural energy utility in South Africa;
(ii) Kuis community project in South Africa;
(iii) Increasing Access to Sustainable Biomass Energy Products and Services in the Lake Victoria Basin, Wakiso District, Uganda;
(iv) Multi function platforms in West Africa (e.g. Mali), West Africa; and
(v) Multifunctional platforms, Tanzania.

In the end, none of these suggested case studies was used as the contact e-mail addresses were incorrect or a suitable time for investigation could not be scheduled.

Conclusion

The Delphi method was successfully applied to identify the 11 most important factors from the 38 identified by the focus group.

The 11 factors identified were used in the case studies when determining which factors are used in practice.