

Chapter 5: External validity of Model β

Model β was presented to the members of the South African CDM Industry Association. The purpose of this was to test the external validity of model β . All members had the opportunity to provide criticism on model β . The criticism was obtained by adapting the initial questionnaire developed in this research. The initial questionnaire, on which Chapter 3 was based, was sent out and completed by the respondents in the second half of 2007. The SA CDM IA, SA CDM landscape and indeed the CDM as a whole had developed substantially from then and it was decided to repeat the questionnaire in the first half of 2009.

It was decided to repeat all the questions that were in the 1st questionnaire and to include some additional questions specifically focused on Model β . The original questions were repeated so as to investigate whether there were substantial shifts in the answers due to developments in the ± 18 month time laps that took place between the 1st and the 2nd questionnaire. Questions 13 to 15 were the additional questions added to evaluate the respondents' view of Model β (See Appendix D).

As stated at the end of the previous chapter Model β was presented to the SA CDM IA and feedback was requested via this 2nd questionnaire. At the end of the first half of 2009, the SA CDM IA consisted of 32 active individuals and parties²⁵. Nine members decided to partake in the 2nd questionnaire²⁶. It is unfortunate that not more active individuals and parties partook in the research. However, a 28% feedback is at least sufficient for indicative reasoning purposes.

²⁵ "Individuals and parties" here implies that either a company has joined the SA CDM IA or an individual. "Active" refers to the fact that the member is not an historical member that was dormant at that stage and whose future involvement with the SA CDM IA was questionable.

²⁶ It is not possible to identify if respondents overlapped between the 1st and 2nd questionnaire since respondents were assured that they will stay anonymous. Respondents replied to the study leader to prevent any perceived research bias or perverse action as the researcher is involved in the SA CDM space.

It is important to remember that the complete CDM process consists of open source information. The result is that the only advantage that one CDM developer has over another is in how the open source information is applied and how internal company specific protocols aid in the development of successful CDM projects. From this point of view the perceived reluctance of the SA CDM IA individuals and parties to partake in this study is understandable. To address this reluctance all possible reassurance was given to the respondents in that no names of companies or individuals would be mentioned. Furthermore, as the researcher is intimately involved in the CDM industry it could lead to the perception that the respondents' personal views could be used against them. For this reason respondents could contact the study leader directly as to bypass the researcher. The sanitized information that the study leader then sent to the researcher alleviated possible concerns regarding sensitive information.

5.1 Discussion on the answered questionnaires and identified trends

In evaluating the 2nd round of questionnaires it was found that the respondents were involved in at least five registered SA CDM projects. This showed an increase as in the 1st questionnaire respondents were involved in at least three registered SA CDM projects.

The success achieved by the CDM industry, as measured by the number of registered CDM projects, increased in the 18 months time laps between the two questionnaires. At the completion of the 2nd round of questionnaires (July 2009) South Africa had 15 registered CDM projects (UNFCCC, 2009) as opposed to the 10 ten registered CDM projects at the end of the 1st round of questionnaires (September 2007).

Most of the respondents²⁷ of the 2nd questionnaire indicated that they were working on more than 10 CDM projects concurrently. This is up from the more than four CDM projects per respondent that was the result of the 1st questionnaire.

It is interesting to note that the location of the current CDM endeavours did not change at all. In the 1st and 2nd questionnaires it was found that 91% of the current focus was on South Africa. The conclusion is that the expected future African continent endeavours that from the 1st questionnaire were to increase from 2% to 12% either did not occur yet or will not occur at all. From the 2nd questionnaire it was found that future African endeavours were expected to increase to 25%. This is doubtful considering that the previous expected African endeavours increase did not happen or at least haven't happened yet. Furthermore none of the respondents of the 2nd questionnaire had any plans for CDM endeavours not based on the African continent.

The respondents considered their relative average fields of expertise as indicated in Table 5.1.

It is interesting to note how the expertise of the respondents of the 2nd questionnaire had exactly the inverse expertise order rating as compared to the 1st questionnaire. One possible explanation of the changing of the fields of expertise could be attributed to a realization in industry that more regulatory expertise is required for these projects. This can though not be stated as a fact as the number of respondents was just too few.

²⁷ The author acknowledges that tables and figures reflecting percentages from a very small sample may generate unfounded statistical confidence. The inferred characteristics or attributes should be viewed as indicative.

Table 5.1: Percentage of expertise as provided by respondents of 1st and 2nd questionnaire

Expertise:	Percentage as provided by respondents:	2nd Questionnaire
Financial	44%	17%
Technical	41%	29%
Regulatory	14%	54%

In summary the following was deduced from the 2nd round of completed questionnaires regarding CDM project management:

- Only 1 of 9 (as opposed to 3 of 8 in the 1st questionnaire) respondents indicated that they follow a formalised CDM project management approach although 8 of 9 (as opposed to 7 of 8 in the 1st questionnaire) respondents indicated a perceived need for such an approach. It is then assumed that in 18 months very little progression was made in the industry regarding the application of a CDM specific project management approach. With a lack of formalised CDM project management it is considered that project management prevailed on a ad hoc basis; and
- Of the 9 respondents, 8 (as opposed to 5 of 8 in the 1st questionnaire) indicated that they had a dedicated person/group acting as project manager for CDM projects. Although the sample groups are small it tends to indicate a growing acknowledgment of the complexities of CDM and that dedicated project managers are required.

Some of the questions in the questionnaire were aimed at establishing where CDM project developers and related parties perceived bottlenecks in successful completing a CDM project. The perceived bottlenecks were divided into financial, technical and regulatory aspects. Furthermore a distinction was made between domestic (South African) and foreign perceived bottlenecks.

The 2nd questionnaire also repeated the questions regarding the perceived bottlenecks experienced by respondents. This is summarized in Table 5.2.

Table 5.2: Breakdown of perceived bottlenecks in successful completion of a CDM project – comparing answers of the 1st questionnaire with the 2nd questionnaire

1 st perceived importance rating:	Perceived bottleneck:	1 st questionnaire percentage:	2 nd questionnaire percentage:	2 nd perceived importance rating:
1	Local regulatory environment	28%	15%	combined 3 rd
2	Foreign technical requirements	25%	22%	2
Combined 3 rd	Foreign regulatory environment	17%	28%	1
Combined 3 rd	Local financial environment	17%	9%	5
4	Foreign financial environment	7%	11%	4
5	Local technical requirements	6%	15%	combined 3 rd

Taking cognisance of the fact that the respondents in the 2nd questionnaire had the inverse speciality fields as compared to the 1st questionnaire it is of importance to note that the top part of Table 5.2 still comprised of the same components. It is then reasonable to assume that the major perceived bottlenecks of CDM were still the same, although the subjective perception of the severity of the bottlenecks changed with time or with respondent group expertise.

In the 1st questionnaire the South African regulatory environment was seen as the single largest bottleneck for the successful completion of a CDM project. This has now changed as in the 2nd questionnaire the foreign regulatory environment was identified as the largest bottleneck. Two possible explanations can be given for this:

- It is possible that the South African regulatory environment (DNA and others) had grown and that capacity expansion alleviated this perceived restriction on progress; and/or
- The foreign regulatory environment of the CDM (UNFCCC related bodies) became more stringent in the application of CDM rules and processes. (This was done as to increase the robustness of the CDM system as corruption occurred in certain countries that had CDM projects. The evolving UNFCCC (2010) CDM rules and history of the rules can be traced on their website.)

The second largest perceived bottleneck remained to be the foreign technical requirements. This can be attributed to various reasons including South Africa's dependence on foreign technological imports.

It is interesting to note that even in the 2nd questionnaire neither local nor foreign financial requirements are viewed as priority substantial bottlenecks. This differs from Little et al. (2007) where it is documented that the 4th highest rated inhibitor was that of "Africa (is) not an investment destination."

Table 5.3 then summarizes the findings of the 1st and 2nd questionnaire. This table combines the local and foreign categories and only distinguishes between regulatory, technical and financial bottlenecks. Again it is important to note that the percentages are only important in order of magnitude and final ranking order.

The question then asked the completion of the 1st questionnaire regarding whether the perceived regulatory bottlenecks that were identified are real or whether a lack of regulatory expertise from the 1st questionnaire's respondents induced perceived added risk can then be arguable answered. The finding was that the regulatory environment was still perceived as the most limiting aspect of the CDM followed by technical requirements and financial requirements. From an order of importance view this did not change in 18 months irrespective of the expertise of the questionnaire respondents.

Table 5.3: High level perceived bottlenecks in successful completion of a CDM project

Perceived importance rating:	Perceived bottleneck:	Percentage:	2 nd
1	Regulatory environment	45%	43%
2	Technical requirements	31%	37%
3	Financial environment	24%	20%

5.2 Experts' input on what is considered to be the success and failure criteria for CDM projects

Respondent 1 noted that for an outsider / uninformed person the CDM process seems simple and appears to make sense, but once you get involved and try to get a project registered and approved the process proves to be tremendously complicated. Respondent 1 further stated that the CDM process has so many pitfalls that success can only be achieved and judged on:

- The level of knowledge that the CDM developer has of the CDM process; and
- Whether it is possible to generate the required paperwork to the satisfaction of the DOE and CDM EB. In contrast to this it is relatively simple to do the calculations depicted in phases 1 – 3 of Model β which provides guidelines of probable success.

It is interesting to note that Respondent 6 stated that even if all the “required paperwork” (Respondent 1) for the CDM is generated it is still difficult to achieve project registration due to:

- A lack of DOE resources;
- The tedious nature of the administration procedures (validation, registration, verification); and
- The approach taken by the DOE and CDM as a whole that the project developers are aiming to abuse the CDM system.

In conclusion, Respondent 1 summarizes his/her experience by saying that the success of a CDM project is highly dependent on the degree to which one can anticipate pitfalls in the process and generate the paperwork to bridge the pitfalls with success.

Table 5.4 summarizes the “pitfalls”, as described by Respondent 1 and the “required paperwork” that is required as stated by Respondent 3:

Table 5.4: Summary of how the Respondents’ comments were taken into account

Criteria	Respondent	Where this is addressed in Model B	Comment
Approved methodology	3	Phase 5: C.4.2	
Proof of Additionality	3	Phase 1: C.1.2	Additionality is seen as a fundamental aspect of CDM and hence falls under Phase 1: C.1.2
Sufficient ER achievable to be financially viable (IRR or other basis)	3, 6, 7,8, 9	Phase 2: B.2.2 Phase 2: C.2.3	
Able to carry transaction cost and raise capital	3, 7, 8, 9	Phase 2: B.2.2 Phase 2: C.2.3	
Good CDM consultants	3	Not Addressed	This model is to be applied by CDM developers and does not aim to rate the competency of the people at plant level or support at any level
Competent people on plant level (input to PDD, monitoring and technical design, financial competency)	3, 8	Not Addressed	
Political and Executive support including a Project Champion	8	Not Addressed	The importance is recognised though
Integration with other processes like EIA	3	Phase 3: C.4.1	
Compliance with local regulatory requirements (EIA etc)	3	Phase 1: C.1.2	Compliance with Host Country specific legislation is seen as a fundamental of CDM and hence falls under Phase 1: C.1.2
Upfront integration of CDM and technical challenges	3	Phase 3: C.4.1	

Respondent 3 reiterated the importance of client management so that the client appreciates the time that is required to complete a successful CDM project. This expectation management is especially important if taken into consideration that according to Respondent 7 the CDM process is still largely unknown in Africa.

5.3 Expert comment on the proposed CDM model (Model β) regarding applicability, completeness, practicality, areas that are unclear or any other comment.

In general Model β was perceived to be:

- A good model with “hardly a step that is not very important” (Respondent 3);
- Fairly clear (Respondent 6); and
- Practical, very comprehensive and very useful (Respondent 9).

It was the opinion of Respondent 1 that some changes have to be made to the developed model based on the “reality pertaining to the development of CDM projects.” This “reality” was stated to be that the primary intent of every CDM developer is to:

- Save money;
- Make money; or
- To improve public image.

And that a reduction in greenhouse gases is a secondary effect of the project.

Respondent 1 concluded by stating that Model β should be considered with a view to make some changes to the cognisance of the above. Model flexibility was also identified in the 1st questionnaire as an important factor for success.

As conclusion it was the view of Respondent 7 that the model should in the early phases also include an analysis of the external environment and project forces: Political, Economic, Social, Legal, Technological and Environmental (PESTLE). Furthermore, Respondent 7 wanted to include an analysis of the internal environments of companies to ascertain whether they do have the correct structures in place to follow this model.

Chapter 6: Conclusions and future work

Emission reduction incentive schemes, like the CDM, have altered the way in which industry views pollution. No longer is the objective to be just below the legal compliant limit, but the aim has shifted to that of emitting as little greenhouse gases (GHG) as possible. The reason for this is that emission reduction incentive schemes (CDM's CERs and VERs) added a revenue stream to pollution prevention. Very few successful CDM projects exist in South Africa, although South Africa has relative potential²⁸ for CDM projects.

The research questions then raised were:

- Why are there so few registered SA CDM projects?
 - What are the current CDM project management approaches followed for CDM projects in SA?
 - Do SA CDM developers use and know of above mentioned research?
 - Do SA CDM developers need some other tool to be more successful?
 - How can project management (current and amended) procedures be formalised with regards to CDM projects in the SA context?

A literature analysis indicated that there is little or no focus regarding CDM concerns in Africa and South Africa. The literature was useful though to identify the additional requirements of such projects as compared to traditional projects – traditional projects refer to projects where project management approaches are well developed, such as construction projects.

The problem statement was: Current accepted project management approaches and systems are inadequate for the speedy completion of CDM projects in South Africa. This was upheld as it could be at least one reason why there are so few successful CDM projects in South Africa.

²⁸ SA has a lot of CDM potential compared to other African projects according to Little et al. (2007).

An exploratory analysis found that CDM project management approaches in South Africa relied on ad hoc day-to-day management. Some of the CDM developers were aware of existing CDM management approaches, but found them very rigid or developed without taking country-specific concerns for South Africa into account. A need was identified for a more structured CDM project management approach focussed on CDM and the local South African concerns.

After exploring the field of stage/phase-gate project management of CDM projects in South Africa various models were developed and investigated to add structure to this field. It is important to note that South Africa has only a few successful CDM developers to date and the research involved obtaining feedback from actual CDM experts with experience in SA CDM projects.

The proposed Model β then aims to add structure to the emerging field of project management of South African and African CDM projects. This is a new field of project management as there was historically no financial incentive to pollute less than the legal requirement. The added levels of complexity and global scrutiny of emission reduction projects brings with it additional project management requirements. The primary aim of Model β is to facilitate the successful completion of emission reduction incentive projects, like CDM projects. Model β also transverses the interdependencies (financial, technical, regulatory) of the emission reduction project environment.

Model β was well received by industry as discussed in the previous chapter. It is then deduced that at least the majority of the issues faced historically in individual projects by CDM project developers in South Africa were addressed and managed by Model β . This is then the first comprehensive emission reduction project specific management model to be developed for the South African CDM environment²⁹.

²⁹ Take into account that Ecofys (2004) highlighted the additional requirements of emission reduction incentive projects, but did not present a project management model. It should also be stated that some project developers periodically disclose some information pertaining to their project management approaches followed. Unfortunately these in-house document sources are contradictory, haphazardly presented, and have no academic backing.

Historically, project developers focussed on only a few projects at a time. More and more projects were developed concurrently by project developers as the industry has expanded in the last ± 5 years. The result was that portfolio management became increasingly important. Model β is also one of the first, if not the first, models to assist South African CDM project developers to do portfolio management in the country specific context. In this respect Model β is truly beneficial.

The regulatory environment of emission reduction incentive projects is fast changing as new rules and regulations are adopted and changed frequently. The result is that the management requirements should also be adjusted frequently. It is important to note that Model β should not be seen as a stationary model, but rather as a dynamic model, that must be tweaked frequently. It will be very difficult for Model β , if it was a stationary model, to aim to manage a dynamic process. This will be true for any stationary model.

Another important point is that Model β must be considered flexible enough by South African CDM project developers to alter it for their specific requirements. These requirements can be influenced by factors including, but not limited to:

- Company structure, including management structure;
- Business unit structure; and
- Cultural influences.

It is foreseen that Model β , or company specific derivatives, could be automated in software. This could aid in project management as long as the software application does not restrict the model flexibility.

The real practical use of this research will only be proven in the application of Model β . To aid in this the SA CDM IA will be sent copies of this research once it has completed its external review process. All interested parties will have access to Model β to apply in a form as solely decided by the parties in question. In this way the SA CDM IA can take ownership of the project

management process followed to achieve successful emissions reduction projects.

Future academic research can then focus on ascertaining the diverse applications and derivatives of Model β . By doing this a long term research relationship can be established between project management research and the SA CDM IA. Only then can the success of Model β , or a derivative, to manage the speedy completion of the CDM process within South Africa be assessed.