GLOBAL ENVIRONMENT FACILITY
EVALUATION OFFICE

# Methodological Note on Triangulation Analysis in Country Portfolio Evaluations

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## *A. Background*

1. This short note intends to draw some lessons, from a methodological point of view, derived from the experience gained in the conduct of the two Country Portfolio Evaluations (CPE) conducted by the Office in Fiscal Year 2010 in Turkey and Moldova. These two CPEs complete the 1st CPE cycle started in 2006, comprising the 11 CPEs conducted by the Office in all the regions (as defined by the World Bank). The aim of this note is to provide methodological guidance and support to Office staffs and external consultants who will be involved in CPE in the next CPE cycle during GEF-5.

2. Country level evaluation analysis conducted by the Office so far has faced a number of limitations, including:

a. Scarcity or unreliability of national statistics on environmental indicators and data series, especially in least developed countries;

b. Challenges in evaluating the impacts of GEF projects. Many projects, especially the oldest ones, do not clearly or appropriately specify the expected impact and sometimes even the outcomes of projects;

c. Intrinsic difficulties in defining the GEF portfolio of projects prior to the undertaking of the CPE.

3. The difficulty in establishing a clear and reliable set of data on projects and project documentation, despite inconsistencies, gaps, and discrepancies contained in the initial available data, is partly due to the very nature of the GEF. Being a partnership institution, information is often located in the management information systems of international and national partners. In addition to that, the Project Management Information System (PMIS) maintained by the GEF Secretariat is not yet able to serve as a central information hub for the GEF partnership as a whole. Nailing down the projects portfolio has been and still is a challenge in several other evaluations conducted by the Office.

4. In the scarcity and/or absence of a reliable set of quantitative data, triangulation can be a useful substitute for obtaining reasonably solid and reliable evaluation results. This note focuses on the steps to be followed for the identification of key preliminary findings at the end of the evaluation analysis phase conducted in the framework of CPEs. This is one of the most critical phases of the CPE analysis.

5. Drawing from the rich literature existing on the subject, the note starts from defining triangulation, its purpose, its different typologies and most common criticisms. The note continues discussing how triangulation analysis can be done in a structured and logical way when conducting CPE analysis aiming at the identification of key preliminary findings.

## *B. Definitions*

6. In the social sciences, triangulation is often used to indicate that more than two methods are used in a study with a view to double (or triple) checking results. Basically, triangulation is based on the

assumption that a study finding is more solid if different methods lead to the same result. If an investigator uses only one method, the temptation for him/her is strong to believe in the findings. If an investigator uses two methods, there is a possibility that the results contradict each other. By using three methods to get at the answer to one question, the hope is that two of the three will produce similar answers, or if three clashing answers are produced, the investigator knows that the question needs to be reframed, methods reconsidered, or both.

7. In research, triangulation is a powerful technique that facilitates validation of data through cross verification from more than two sources. Here, triangulation refers to the application and combination of several research methodologies in the study of the same phenomenon:

i. It can be employed in both quantitative (validation) and qualitative (inquiry) studies;

ii. It is a method-appropriate strategy of founding the credibility of qualitative analyses;

iii. It becomes an alternative to traditional criteria like reliability and validity;

iv. It is the preferred line in the social sciences.

8. By combining multiple observers, theories, methods, and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single method, single-observer and single-theory studies.

9. The purpose of triangulation in qualitative research is to increase the credibility and validity of the results. Several scholars have aimed to define triangulation throughout the years. Cohen and Manion (1986) define triangulation as an "*attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint*". Altrichter et al. (1996) contend that triangulation "*gives a more detailed and balanced picture of the situation*". According to O'Donoghue and Punch (2003), triangulation is a "*method of cross-checking data from multiple sources to search for regularities in the research data*". Denzin (1978) identified four basic types of triangulation:

i. *Data triangulation*: involves time, space, and persons;

ii. *Investigator triangulation*: involves multiple researchers in an investigation;

iii. *Theoretical triangulation*: involves using more than one theoretical scheme in the interpretation of the phenomenon;

iv. *Methodological triangulation*: involves using more than one method to gather data, such as interviews, observations, questionnaires, focus groups and documents.

10. *Methodological triangulation* is the most commonly used triangulation analysis in evaluation. If applied rigorously, triangulation helps reducing a common risk in evaluations, the risk of being anecdotic in the identification of evaluation findings.

### *C. Criticisms*

11. The idea of triangulation has been criticized on several grounds. First, it is sometimes accused of subscribing to a naive realism that implies that there can be a single definitive account of the social world. Such realist positions have come under attack from writers aligned with constructionism and who argue that research findings should be seen as just one among many possible renditions of social life. On the other hand, writers working within a constructionist framework do not deny the potential of triangulation; instead, they depict its utility in terms of adding a sense of richness and complexity to an inquiry. As such, triangulation becomes a device for enhancing the credibility and persuasiveness of a research account.

12. A second criticism is that triangulation assumes that sets of data deriving from different research methods can be unambiguously compared and regarded as equivalent in terms of their capacity to address a research question. Such a view fails to take account of the different social circumstances associated with the administration of different research methods, especially those associated with a between-methods approach. For example, the apparent failure of findings deriving from the administration of a *structured interview* to converge with *focus group* data may have more to do with the possibility that the former taps private views as opposed to the more general ones that might be voiced in the more public arena of the focus group.

### *D. Use of Triangulation in GEF Evaluation Office CPEs*

13. In evaluation, triangulation is very often used, but very rarely defined. Usually, empirical evidence is cross-checked through three major research areas: *Perceptions*, *Validation* and *Documentation*.[1] Each of these is alimented by a series of evaluation methods. The most generally used evaluation methods are indicated in Table 1 with their related sources of information.

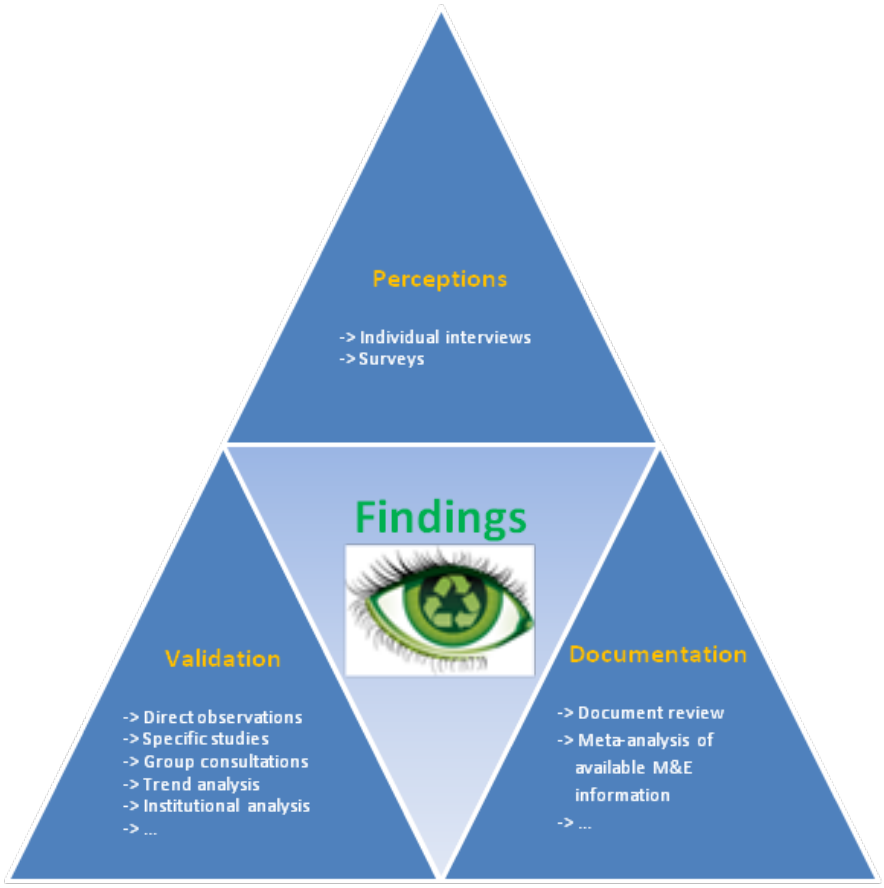
**Table 1: Most generally used methods and related sources of information**

| Method | Source of information |
|---|---|
| **Perceptions** | |
| Individual interviews | • Involved stakeholders<br>• External key informants |
| Surveys (including electronic and other surveys) | • Involved stakeholders<br>• External key informants |
| **Validation** | |
| Group consultations (stakeholder meetings, focus groups, group interviews, other) | • Involved stakeholders<br>• External key informants |
| Direct observation | • Field visits<br>• Involved stakeholders at local level<br>• Other local level stakeholders |
| Specific studies (case studies, beneficiaries assessments, impact studies, other) | • Relevant documentation<br>• Field visits<br>• Involved stakeholders<br>• External key informants |
| Trend analysis (including portfolio analysis, timelines, aggregate results analysis, other) | • National statistics<br>• Management information systems |
| Institutional analysis (stakeholder meetings, focus groups, group interviews, other) | • Relevant official documents (including laws, norms and regulations)<br>• Representatives from the institutions involved<br>• External informants |
| **Documentation** | |
| Desk review | • Project related documentation<br>• Relevant policies, strategies and action plans<br>• National statistics<br>• Other external documents |
| Meta-analysis | • Project mid-term and terminal evaluations<br>• External reviews of terminal evaluations<br>• Other country, thematic or other relevant evaluations |

[1] The distinction between *perception*, *validation* and *documentation* research areas in triangulation analysis is taken and further developed from a draft framework and guidance paper on Assessment of Development Results (UNDP, July 2002). This is one of the rare methodological guidance papers attempting to define and describe triangulation.

14. Triangulation happens by cross-checking information and analysis resulting from these three research areas. This exercise leads to the identification of evaluation findings. Figure 1 illustrates the general concept of triangulation in evaluation.

**Figure 1: Triangulation**




15. In the CPEs conducted by the Office, an evaluation matrix is usually finalized during the evaluation launching phase, which culminates with a scoping mission in the country. This is a rather common evaluation matrix, containing the usual elements of key evaluation questions, indicators and sources of information, and methodology components. The matrix is annexed to the country-specific CPE Terms of Reference (TOR), produced as a result of the scoping mission. The key evaluation questions in the matrix are structured around the three evaluation criteria of relevance, efficiency and effectiveness, as Table 2 shows:

**Table 2: Standard CPE Evaluation Matrix**

| Key evaluation questions | Indicators | Sources of information | Methodology components |
|---|---|---|---|
| **Relevance** | | | |
| KQ1 | I1, I2, … | SoI1, SoI2, SoI3, … | M1, M2, M3, … |
| KQ2 | … | … | … |
| KQ3 | … | … | … |
| … | … | … | … |
| **Efficiency** | | | |
| KQ1 | I1, I2, … | SoI1, SoI2, SoI3, … | M1, M2, M3, … |
| KQ2 | … | … | … |
| KQ3 | … | … | … |
| … | … | … | … |
| **Effectiveness of results** | | | |
| KQ1 | I1, I2, … | SoI1, SoI2, SoI3, … | M1, M2, M3, … |
| KQ2 | … | … | … |
| KQ3 | … | … | … |
| … | … | … | … |

16. Once the country-specific TOR of the CPE are finalized and published on the Office website, the evaluation analysis phase is launched. During this phase data gathering, collection of evaluative evidence, document reviews and the conduct of related analyses take place. Each of these methods and related sources of information leads to the identification of specific findings. These need to be triangulated, i.e. cross-checked with each other in order to obtain preliminary key evaluation findings. The procedure described here indicates how to progressively move from method-specific findings (i.e. the answers to key evaluation questions) to preliminary key evaluation findings through triangulation analysis.

17. Before describing the steps to be followed, in is important to highlight that for triangulation analysis to be successful, two necessary pre-conditions need to be met:

a. a well developed evaluation matrix; and

b. an adequate planning/timing of the brainstorming session (§19), which should ideally be conducted in the country at completion of the evaluative evidence gathering and analysis phase, i.e. when method-specific findings have been identified.

18. Triangulation analysis starts at the end of the evaluation analysis phase. It launches the following phase, i.e. the consolidation of evaluative evidence and identification of key preliminary findings. Consolidation starts from the elaboration of a triangulation analysis matrix. This is a simple derivation of the initial evaluation matrix, with some differences. The first column on the left has the key evaluation questions structured by the evaluation criteria of relevance, efficiency and effectiveness. On the right are the columns with the methodology components used in the evaluation. The last column on the left will be filled with the key preliminary findings resulting from the triangulation analysis.

19. The progressive building up of the triangulation analysis matrix is explained through a series of simple steps as indicated in Table 3. The matrix is to be built up by the CPE Evaluation Team during an internal brainstorming session. Steps i. to iii. are to be completed prior to the brainstorming session.

**Table 3: Building a Triangulation Analysis Matrix**

| STEPS | Progressive building up of the Triangulation Analysis Matrix |
|---|---|

1. All the key evaluation questions from the evaluation matrix are transferred in the first column on the right of the triangulation analysis matrix. The formulation of the questions should not be altered.

| Key evaluation questions | PERCEPTIONS | | VALIDATION | | DOCUMENTATION | | Key Preliminary Findings |
|---|---|---|---|---|---|---|---|
| **Relevance** | | | | | | | |
| KQ1 | | | | | | | |
| KQ2 | | | | | | | |
| KQ3 | | | | | | | |
| ... | | | | | | | |
| **Efficiency** | | | | | | | |
| KQ1 | | | | | | | |
| KQ2 | | | | | | | |
| KQ3 | | | | | | | |
| ... | | | | | | | |
| **Effectiveness of results** | | | | | | | |
| KQ1 | | | | | | | |
| KQ2 | | | | | | | |
| KQ3 | | | | | | | |
| ... | | | | | | | |

2. The methodology components and their related sources of information indicated in the evaluation matrix for each question are transferred in the adjacent columns. As many columns as needed are added, depending on which and how many methods were expected to be used.

| Key evaluation questions | PERCEPTIONS | | VALIDATION | | DOCUMENTATION | | Key Preliminary Findings |
|---|---|---|---|---|---|---|---|
| | *Method 1* | *Method 2* | *Method 3* | *Method 4* | *Method 5* | *...* | |
| **Relevance** | | | | | | | |
| KQ1 | | | | | | | |
| KQ2 | | | | | | | |
| KQ3 | | | | | | | |
| ... | | | | | | | |
| **Efficiency** | | | | | | | |
| KQ1 | | | | | | | |
| KQ2 | | | | | | | |
| KQ3 | | | | | | | |
| ... | | | | | | | |
| **Effectiveness of results** | | | | | | | |
| KQ1 | | | | | | | |
| KQ2 | | | | | | | |
| KQ3 | | | | | | | |
| ... | | | | | | | |

3. The methods indicated in the evaluation matrix under each question are mapped where relevant in the triangulation analysis matrix.

| Key evaluation questions | PERCEPTIONS | | VALIDATION | | DOCUMENTATION | | Key Preliminary Findings |
|---|---|---|---|---|---|---|---|
| | *Method 1* | *Method 2* | *Method 3* | *Method 4* | *Method 5* | *...* | |
| **Relevance** | | | | | | | |
| KQ1 | x | | x | | | x | |
| KQ2 | | x | | | | | |
| KQ3 | x | | | x | x | | |
| ... | | x | | | x | x | |
| **Efficiency** | | | | | | | |
| KQ1 | | x | | x | | | |
| KQ2 | | | x | | | | |
| KQ3 | x | | x | | x | | |
| ... | x | | | x | | x | |
| **Effectiveness of results** | | | | | | | |
| KQ1 | | | | | | x | |
| KQ2 | | x | | | x | | |
| KQ3 | x | x | | | x | | |
| ... | | | x | | x | x | |

4. Brainstorming with the Evaluation Team starts. By discussing one question at a time, the team fills in the relevant finding emerged from each method in the appropriate cell in the matrix. Experience has shown that a productive triangulation brainstorming session in CPEs can take up to two full days.

| Key evaluation questions | PERCEPTIONS | | VALIDATION | | DOCUMENTATION | | Key Preliminary Findings |
|---|---|---|---|---|---|---|---|
| | *Method 1* | *Method 2* | *Method 3* | *Method 4* | *Method 5* | *...* | |
| **Relevance** | | | | | | | |
| KQ1 | F1 | | F2 | | | F3 | |
| KQ2 | | F4 | | | | | |
| KQ3 | F5 | | | F6 | F7 | | |
| ... | | F8 | | | F9 | F10 | |
| **Efficiency** | | | | | | | |
| KQ1 | | F11 | | F12 | | | |
| KQ2 | | | F13 | | | | |
| KQ3 | x | | x | | x | | |
| ... | x | | | x | | x | |
| **Effectiveness of results** | | | | | | | |
| KQ1 | | | | | | x | |
| KQ2 | | x | | | x | | |
| KQ3 | x | x | | | x | | |
| ... | | | x | | x | x | |

5. The results of the previous step will most probably allow identifying those key questions which findings are confirmed by more than one method. It will then be possible to consolidate these findings into one key preliminary finding. This will be reported in the last column at the right of the matrix. By cross-checking each others' findings, team members avoid raising the importance of anecdotes in the formulation of key preliminary findings.

| Key evaluation questions | PERCEPTIONS | | VALIDATION | | DOCUMENTATION | | Key Preliminary Findings |
|---|---|---|---|---|---|---|---|
| | *Method 1* | *Method 2* | *Method 3* | *Method 4* | *Method 5* | *...* | |
| **Relevance** | | | | | | | |
| KQ1 | F1 | | F2 | | | F3 | KPF1 |
| KQ2 | | F4 | | | | | |
| KQ3 | F5 | | | F6 | F7 | | KPF2 |
| ... | | F8 | | | F9 | F10 | |
| **Efficiency** | | | | | | | |
| KQ1 | | F11 | | F12 | | | KPF3 |
| KQ2 | | | F13 | | | | |
| KQ3 | x | | x | | x | | |
| ... | x | | | x | | x | |
| **Effectiveness of results** | | | | | | | |
| KQ1 | | | | | | x | |
| KQ2 | | x | | | x | | |
| KQ3 | x | x | | | x | | |
| ... | | | x | | x | x | |

6. Some key questions will be answered only by one method. Those questions need further analysis. Similarly, some other key questions will be answered by findings that are either not confirming or clearly contradicting each other. Those questions also need further analysis. In both cases, findings are highlighted in the matrix. The need for further analysis is indicated in the last column on the left.

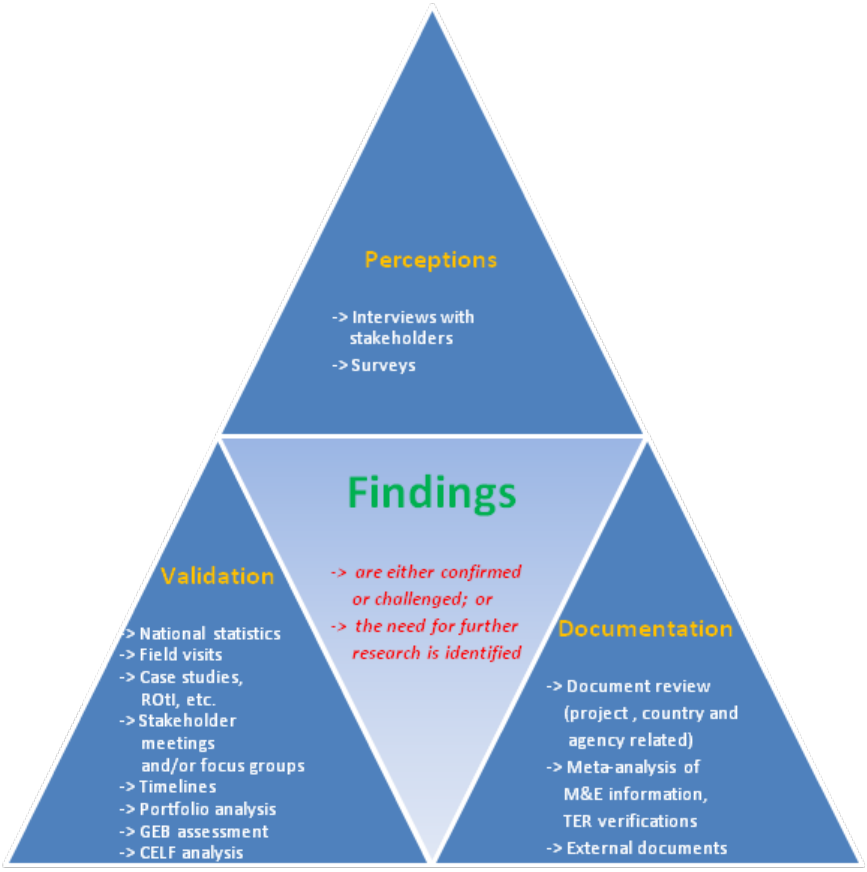
| Key evaluation questions | PERCEPTIONS | | VALIDATION | | DOCUMENTATION | | Key Preliminary Findings |
|---|---|---|---|---|---|---|---|
| | *Method 1* | *Method 2* | *Method 3* | *Method 4* | *Method 5* | *...* | |
| **Relevance** | | | | | | | |
| KQ1 | F1 | | F2 | | | F3 | KPF1 |
| KQ2 | | F4 | | | | | *need further analysis* |
| KQ3 | F5 | | | F6 | F7 | | KPF2 |
| ... | | F8 | | | F9 | F10 | |
| **Efficiency** | | | | | | | |
| KQ1 | | F11 | | F12 | | | KPF3 |
| KQ2 | | | F13 | | | | |
| KQ3 | x | | x | | x | | |
| ... | x | | | x | | x | |
| **Effectiveness of results** | | | | | | | |
| KQ1 | | | | | | x | |
| KQ2 | | Fx | | | Fx | | *need further analysis* |
| KQ3 | x | x | | | x | | |
| ... | | | x | | x | x | |

7. The final step consists in identifying whether (and which) other methods can be used to conduct further analysis, and specify any eventually available related source of information that can be used. This step will close the brainstorming session.

| Key evaluation questions | PERCEPTIONS | | VALIDATION | | DOCUMENTATION | | Key Preliminary Findings |
|---|---|---|---|---|---|---|---|
| | *Method 1* | *Method 2* | *Method 3* | *Method 4* | *Method 5* | *...* | |
| **Relevance** | | | | | | | |
| KQ1 | F1 | | F2 | | | F3 | KPF1 |
| KQ2 | | F4 | | SoI1 | | SoI2 | *need further analysis* |
| KQ3 | F5 | | | F6 | F7 | | KPF2 |
| ... | | F8 | | | F9 | F10 | |
| **Efficiency** | | | | | | | |
| KQ1 | | F11 | | F12 | | | KPF3 |
| KQ2 | | | F13 | | | | |
| KQ3 | x | | x | | x | | |
| ... | x | | | x | | x | |
| **Effectiveness of results** | | | | | | | |
| KQ1 | | | | | | x | |
| KQ2 | | Fx | SoI3 | | Fx | SoI4 | *need further analysis* |
| KQ3 | x | x | | | x | | |
| ... | | | x | | x | x | |

20. The additional data gathering and evaluative analysis that follows as a result of the triangulation analysis described aims at identifying the missing key preliminary evaluation findings, as Figure 2 shows.

**Figure 2: Triangulation in CPEs and next steps**



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