Annex 9 Preliminary Methodology Guide

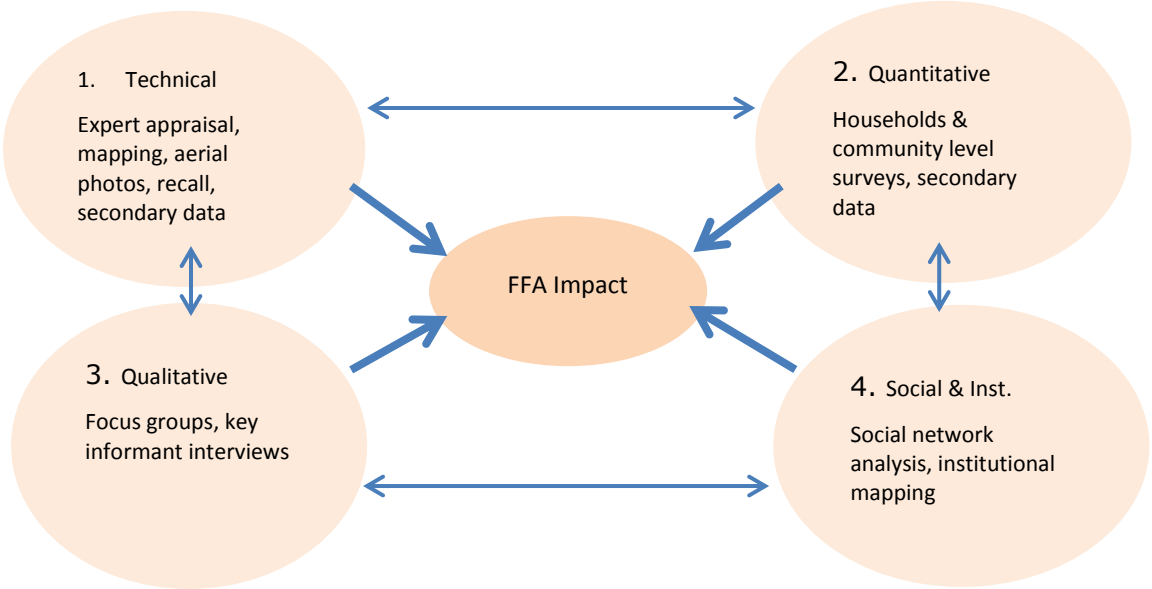
This methodology guide was commissioned by OE from the Overseas Development Institute as a part of the evaluability assessment. It will be further refined and developed in the inception report of the first country evaluation conducted in Phase 1 of the series of impact evaluations on FFA for livelihoods resilience, including all survey and other data collection tools. It will be subsequently adapted if needed for the other countries, with the objective to remain as consistent across all countries in the series as possible, while allowing for slight adjustments as needed for specific country contexts.

Evaluation approach

1. The overall objective of the cluster of evaluations is to assess the impact of Natural Resource Management related assets created through WFP's FFA interventions on livelihoods, resilience and food security, this includes assets created as part of soil and water conservation schemes as well as watershed protection and management programmes. The methodology will test the prevalent assumption informing much of WFP's FFA design, namely that the creation of these assets will enhance productivity and food security, improve livelihoods in the medium- and long-term and promote resilience.

2. The evaluation will employ a mixed methods approach following rigorous protocols to take account of impact heterogeneity, confounding factors, selection bias and spill-over effects as well as lack of baseline data and imperfect control groups.
3. The approach will comprise of 4 integrated components, as shown in the diagram below:

- Technical appraisal of assets (quality, appropriateness and viability over time) and associated biophysical changes
- Quantitative survey of asset impacts at household and community level
- Qualitative assessment of impacts at household and community level
- Social and institutional analysis of networks and linkages



5. A technical appraisal will be conducted of assets created, including an appraisal of associated biophysical changes and this linked with survey based quantitative approaches, and a range of qualitative approaches including social network analysis, to assess their direct and indirect impact on households and the wider community in the medium term.

5.2 Technical component

6. As an initial starting point and to identify assets for the technical appraisal, a "randomised technical asset appraisal" will be carried out. From a list of all WFP natural resource-related productive assets that were created 5 to 7 years ago in a given country, random sample of assets will be locate to assess whether a) the assets still exist, b) their condition, and c) their functionality (as intended). This by itself will already provide a compelling impact story. An assessment will be done of a larger number of assets through the "randomised technical asset appraisal" than in the in-depth analysis outlined further below. The results of the "randomised technical asset appraisal" will be used to purposively sample x number of assets created under the programme and carry out a technical appraisal of their functionality and performance. There is merit in investigating the factors determining why some assets no longer exist and why assets are or are not functioning as anticipated. The key contextual factors influencing asset performance will be explored in order to generate lessons for future programming. The sampling strategy will be set out in detail in the inception report for the first evaluation.

7. The technical appraisal component assesses whether the assets created are fit for purpose, in terms of appropriateness of interventions selected, technical specification, execution, and continued functionality, and whether there is evidence of the anticipated bio-physical outcomes.

8. The technical appraisal will be carried out by a natural resource management (NRM) expert who will appraise the assets against a specified set of criteria which will be developed based on, for example, national guidelines for watershed protection and soil and water conservation planning, national guidelines for community based participatory watershed development where available (e.g. Lakew Desta et al, 2005), or international best practices and guidelines for water harvesting and community-based small-scale irrigation (Anderson and Burton, 2009).

9. The technical assessment will focus on the quality of investments, in terms of a) achieving soil and water conservation effects, b) contributing to a reduction in natural resource degradation, c) increasing land productivity and d) mitigating the impact of floods and droughts. It will be based on a mix of primary and secondary data collection and analysis, and entail site visits, secondary data review, key informant interviews and focus group discussions. As part of the technical appraisal GPS coordinates of the assets will be collected to allow them to be mapped (e.g. using Google Earth) the spatial spread and other characteristics of these assets as well as take pictures in an effort to create baseline information.

10. The technical assessment will review whether bio-physical factors (rainfall erosivity, soil erodibility, slope gradient and length, soil depth, vegetation cover

and land management practices), have been adequately taken into account in the design. The assessment will also assess whether land-management and land-use parameters (farming / cropping systems, crop-livestock integration and land management techniques) and socio-economic and institutional factors (labour availability, gendered roles in labour allocation, crop preference, market access, access to inputs and capital and socio-economic and demographic factors affecting usage) have been given adequate consideration.

11. In addition to evaluating the technical and social integrity of the asset, the bio-physical impacts of the intervention and the resulting productivity outcomes will be assessed using a range of qualitative and quantitative indicators triangulating self-reporting (which has characterised previous impact evaluations (e.g. Farrington, Turton and James, 1999; Kerr, 2002) with objective technical indicators, to assess change over time.

12. Although desirable to directly measure bio-physical outcomes such as increased water availability (springs and well yields, water availability throughout the year, elevated water tables, reduced soil, nutrient losses, increased vegetation cover, and related impacts on soil productivity and yields), the time frame of this evaluation limits options for primary data collection. Hence the proposed approach is primarily reliant on available secondary data and qualitative information collected from a range of sources.

13. Listed below are examples of qualitative and quantitative approaches typically used to assess different natural resource outcomes and impacts, including proxy indicators in lieu of direct measurement. Whenever possible a range of qualitative and quantitative evidence gathered within treatment areas will be cross-checked with research results from control areas if available.

14. ***Afforestation***
    - Area before and after FFA (mapping, photo-monitoring, recall information)
    - Visual impression / expert judgement of tree and grass growth in afforestation area (1 = good, 2 = mediocre, 3 = bad, 4 = nothing remaining)
    - Focus groups with farmers on additional benefits, institutional arrangements, and distributions of costs and benefits

15. ***Soil and Water Conservation (SWC) on crop land***
    - Area covered with SWC structures (information from regions/districts, implementing agency, recall, aerial photos, etc.)
    - Visual impression / expert judgement of quality of structures, (rating as above, along transects) and soil productivity using crop growth as proxy
    - Soil nutrient and yield data (region/district, prior research etc.)
    - Focus groups with farmers on perceived costs and benefits of SWC, recall information on crop yields, changed agronomic practices, maintenance, up/downstream distribution of costs and benefits
    - Crop yields / productivity / net returns (current year)

16. Water availability and increased production

Focus group with farmers (number of functioning wells/springs/streams with water, water availability (seasonal), quantity and quality, distributional impacts,

etc. An assessment of additional crop or livestock production and the extent to which it is due to increased water availability and fertility will also be explored through focus group discussions with farmers, traders and region/district officials. This information, in association with data on soil loss / soil depth yield, etc, can be used for cost-benefit analysis.

17. In addition it is hoped that a comparative appraisal of changes in biophysical condition may also contribute to insights regarding the impact of the assets. Assets often have significant secondary off-site benefits; however the assessment of these impacts falls outside the scope and objectives of the present evaluation.

18. If it proves to not be possible to do the technical appraisal using mapping, photo-monitoring and so on because of a lack of adequate data, this will be addressed through focus group discussions with farmers and other respondents.

5.3 Quantitative component

19. Assuming that the technical appraisal indicates that productivity gains should be anticipated from the assets created, quantitative methods will be used to evaluate changes in livelihoods, resilience and food security and the extent to which a causal link can be identified between these changes and the natural resources-related assets created.

20. Household surveys will be conducted to explore the research question outlined above relating to the impact of the intervention on in livelihoods, resilience and food security. Household surveys will be implemented in the areas which were technically appraised and control areas (discussed further below). A modified version of the World Bank's CWIQ survey tool (see: questionnaire attached an Annex 1[1]) will be used to collect data on the topics mentioned above. The advantage of using an adapted version of CWIQ is that data collection and reporting of results are made easy, the questionnaire is short and allows quick data entry. Given the ambitious nature of this evaluation and resource constraints, a lengthy household survey questionnaire does not appear to be feasible, thus the use the World Bank tool to collect information on core indicators which will be adjusted according to our purpose.

21. The CWIQ will be adapted using WFP standard corporate surveys where possible, which include the Household Assets Score, the Community Assets Score and the Coping Strategy Index. Furthermore, secondary data such as national household level and census data, e.g. the Nepal Living Standards Survey, will be used to triangulate with survey findings.

22. As the implementation of an experimental approach is not feasible due to the nature of the intervention and likely lack of appropriate baseline data, **2 possible design approaches** which were explored during the evaluability assessment:

[1]Follow this link for further information on the CWIQ
http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTPUBREP/EXTSTATINAFR/0,,contentMDK:21104598~menuPK:3091968~pagePK:64168445~piPK:64168309~theSitePK:824043,00.html

- With/without
- Before/after

Table 1: Evaluation designs

Design option	Characteristics	Drawbacks
With/without	Compare the average outcomes between a treatment and control group at a particular point in time.	Treatment and control groups may be incomparable due to selection bias
Before/after	Naïve, but easy-to-grasp average difference in outcomes before and after treatment.	Naïve because the average observed difference may be influenced by other observed and unobserved effects (e.g. general time trend etc).

Option 1) with/without

23. As the evaluations will investigate productive natural resources assets which are often unique to particular contexts (i.e. agro-ecological zones and so on), finding an appropriate control area that is comparable to the treatment area is challenging. However, the evaluability assessment proved that it may be possible to pair each treatment area with a purposively selected control area nearby sharing similar agro-ecological and socio-economic characteristics and conforming to the same criteria adopted to select the treatment areas, but without similar water-related productive assets. An additional challenge will be to identify areas with programmes that were implemented 5 to 7 years ago to assess the mid- and long-term impact of assets, given the existence of local WFP it may be possible to identify assets that were created 5 to 7 years ago, i.e. using 2007 as the cut-off year.

24. Furthermore, secondary data, e.g. national household level surveys and census data, will be used to provide additional insights and complement our own data collection. The sampling strategy and power calculations will be finalised in the inception report.

Option 2) before/after

25. Should a with/without design fail, the remaining option is a before/after design (i.e. pre-intervention as well as post-intervention data will be collected). Given the likely absence of comprehensive and high quality baseline data, the household survey of the before/after study would include retrospective questions in order to construct pre-intervention data, i.e. the "before" scenario. This is not ideal as recall methods can be unreliable, hence (as mentioned above) secondary data such as relevant household and community level data would be used to construct a pre-intervention dataset if possible.

Analytical method

26. The analytical method that is most appropriate for both options is a **single difference-in-difference approach** (DID). DID is one of the most widely used formal methods of impact evaluation. The main idea underlying DID is that a time trend for treatment and control groups that exist even before the intervention will confound the impact of the intervention and thus will need to be controlled for. In other words, the change in the outcome variable due to time trend that can be observed from the control group should be deducted from the change in the treatment group. If Y_i^j represents the outcome variable (e.g. crop yield) for group i (i = 1 for control and i = 2 for treatment group) in time j (j = 0 for baseline and j = 1 for post treatment) the DID estimator is

    a. $(Y_2^1 - Y_2^0) - (Y_1^1 - Y_1^0)$

27. This can also be presented in a regression equation. Let T_2 and D respectively represent dummy variables for post-treatment period and for the treatment group. The DID estimator is β_3 in the following regression (μij stands for the error term):

    a. $Y_i^j = \beta_0 + \beta_1 D + \beta_2 T_2 + \beta_3 D^* T_2 + \mu_i^j$
    b.

28. The above basic DID regression can be modified either by taking first differences or deviations from mean (within estimator) so that it fits our research design.

29. If more data on socio-economic conditions (e.g. from existing national household level data sets) of households are available, these variables will be added on the above regression making the DID a conditional estimator. Note that since the selection is not fully randomised the importance of conditioning on observables should not be underestimated.

30. The assumption of a constant time trend in the DID methodology can be a major limitation if time trends change after the introduction of the treatment. Conditioning on these additional variables can help to minimise this limitation.

31. As mentioned above, baseline data and data on control groups is often not available, but some progress can be achieved by using other data sources that cover the study areas (i.e. before the start of the FFA interventions) and comparing time trends between the treatment groups with that of the control groups; other national household survey data can be used for this purpose. This provides an idea of time trends between the treatment and control groups before the start of the FFA. Also, the WFP conducts regular evaluations of the same type of activity that use a similar methodology and thus using these data can in some cases allow triangulation with the data collected through our evaluation.

32. The use of new technologies as part of the quantitative data collection, i.e. the use of Personal Digital Assistants (PDAs), is encouraged where possible as this would be a more cost effective way to produce data, speed up data collection and data entry as well as reduce errors.

Indicators

33. The survey questionnaire will collect data at the household level using an adapted version of the World Bank's CWIQ survey questionnaire as mentioned above; the

World Bank tool will be amended ensuring that indicators that have been identified through the logic model and evaluation matrix are included and relating the tool to WFP's corporate surveys where possible including the Household Asset Score, Community Asset Score and Coping Strategy Index. These indicators are related to livelihoods, resilience and food security such as household demographics, housing improvements, assets, income, coping with shocks/vulnerability, livelihood diversification strategies/activities and so on (the approach will be finalized in the inception report for the first country in the series and applied in subsequent countries, with minor modifications if needed).

34. The questionnaire will also identify the extent of complementary and innovative programming interventions implemented by WFP as well as external agents in the programme areas, and perceptions of their role in influencing programme outcome.

5.4 Qualitative component

35. Qualitative tools such as in-depth focus group discussions will be used to triangulate technical appraisal and survey data findings as well as help to identify important processes and causal links.

36. F**ocus group discussions** will be used to explore issues raised by survey data analysis. In-depth focus group discussions will be employed to assess how FFA-related interventions have an impact on livelihoods, resilience and food security. Such in-depth focus group discussions will follow established approaches now also known as Household Economy Analysis (HEA, FEG et al., 2008). This will allow assessment of how impacts of interventions are felt across different livelihood groups, and more importantly, among different wealth groups within a given livelihood group. In terms of natural resource focused FFA interventions, wealth and gender differences are crucial and impacts on key household characteristics (e.g. income, expenditure, access to natural resources and resource-based services such as potable water) will be felt very differently across wealth and livelihood groups.

37. The qualitative component will also explore the role of complementary interventions affecting programme outcomes, and issues relating to the distribution of direct and indirect benefits within communities.

5.5 Social and institutional analysis

38. It is anticipated that interventions addressing FFA will have impacts which extend beyond individual households to their communities, and possibly even other communities beyond the immediate programme intervention area. Monitoring these spill-over effects, however, is difficult. Information, knowledge, resources, skills, labour (if there is migration) will spread out and generally be expected to decay with distance. Hence, to have a comprehensive inventory of these externalities a randomly selected sample of individuals from the treatment areas will be asked if they have transferred the benefits acquired from the WFP FFA interventions to anyone outside the treatment areas; if they did more information on what was transferred, where those individuals live, what is their relationship, etc. will be recorded, following a similar approach to that taken generating network data. This information can be mapped with GIS coordinates and analysed using **social network analysis** providing an insight on the spatial

extent and nature of the network through which externality effects flow. Transect focus groups e.g. along the path of watersheds or other FFA impact areas, will also be carried out. Employing this approach, however, will depend on cost and time considerations and will further explored during the inception mission for each country.

39. In addition, it is important to understand what other forms of assistance are available within the communities and propose an **institutional mapping approach** including interviews with other organisations in the area providing similar assistance as WFP and with the communities to map the intervention environment. This will include a mapping of complementary and innovative programming developed by WFP as well as external agents in the programme areas.