# ANNEX VIII

# TERMS OF REFERENCE FOR THE TECHNICAL AUDIT

## Purposes of the Field Audit

While the overall objective of the audit process is to provide all the data needed to review sectoral plans, this information will, of course, be plan specific and will further depend on decisions of the Executive Committee regarding compensation for lost profit and on funding of new production capacity. One can, however, visualize that, although preparation and initial analysis can be carried out anywhere, by such means as distribution of questionnaires, meetings with ODS production sector representatives, etc., obtaining certain information to complete the analysis will require a Field Audit. Broadly, there are three purposes to the Field Audit:

1) establish utilized (audited) present operating yearly capacity and potential capacity of individual plants and total country production capacity;

2) determine production history of individual plants and total country production history; and

3) other relevant technical/commercial information on country and market underlying the sectoral plan which is conveniently gathered in the Field.

## Function and Responsibilities of Field Audit Team(s)

- Modality of Operation - operate country-by-country, as invited,
- Reporting - to the Chief Officer of the Multilateral Fund with input and advice from the Expert Group; and
- Composition - Total of at least three with overlapping skills in fluorine technology, process/project/operations, estimating/economics; in addition, a representative from the Expert Group and local expert, as needed.

## Issues to be addressed by field audit team

Capacity

- Assess ability of each site to produce ODS under sustainable conditions, i.e. for a full year, including environmental impact;

- For CFCs, assess potential for conversion of each site to HCFC or HFC production[1];
- Assess site and national availability and cost of chlorocarbons and HF, i.e. size and location of plants.

Production History and Profitability

- Assess production history based on site production and storage records and from local/national sales records, including imports-exports; and
- Collect site cost/profitability data, including cost of labour, number of workers, selling price of products, taxes and subsidies, if any.

Other relevant information

- Collect data from national plan on project supply and demand for ODS and ODS substitutes, HF and chlorocarbons;
- Analyze transport costs for raw materials and products; and
- Evaluate status and availability of national technology for ODS substitutes, together with their estimated production costs and possible scale of production over the next five years.

**Analysis of Field Data and Completion of Audit (by Expert Group, subgroup thereof or consultants)**

This builds on the information from the Field Audit teams to create the framework to review sectoral plans. Some tasks may be plan specific, and technical information beyond that garnered in the Field Audit may be required, but typical issues include:

- Evaluate ODS production economics for main and/or typical sites, including distribution/transportation costs;
- Compare production data to other sources;
- Compare production data to results of "capacity audit";
- Evaluate conversion costs, for applicable sites, to HCFC and HFC production, and the resulting production economics and achievable capacities;
- Demand estimate based on Country Programmes and downstream projects;
- Evaluate sectoral plan data for level of detail needed for costing;
- Assess technical feasibility of sectoral plans, reflecting all results of the audit; and
- Cost sectoral plans.

[1] Subject to further analysis and verification, including detailed process calculations if necessary. Field Audit should collect data for such analysis and rule out sites for expansion, conversion and/or revamp based on field factors such as, space limitations, limited access to raw materials, etc.

**Cost and Duration**

Cost and duration of a Field Audit will be country specific, depending on the number of sites to be visited. These will typically include the principal production centers as well as repositories of national data, and potentially one or more research centers.

Once the number of sites to be visited is fixed, it becomes possible to estimate the duration of the Field Audit. Given the need for access to key people, etc., it is conceivable that a Field Audit may comprise more than one mission. The duration is converted to a cost by multiplying by the Team size and the cost per manday.

Cost of analysis of the data and completion of the audit will also be plan specific, but will certainly involve at a minimum several manweeks of work. It is to be noted also that information on new plant economics and future price projections will be needed and will have to be developed or acquired at additional cost.