

## Mid-term Evaluation of the CFC/ICAC Project

### Utilization of Cotton Plant By-produce for Value-added Products (CFC/ICAC/20)

#### Terms of Reference for Consultants

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##### **Background**

Objective and Scope of the Project: The project aims to increase value addition for cotton farming by demonstrating the utility of cotton stalk residues in commercial particle board and fibre board production. The project aims to demonstrate and evaluate the organisation of collection, storage and pre-processing of cotton stalk for industrial use as well as to demonstrate the techno-economic feasibility to board manufacturers and investors. If successfully implemented, the sale of cotton stalks is estimated to increase the income of small farmers by around 5% and create industries and jobs in the rural areas of India and other cotton growing countries.

The project has the following five main components: (1) analysis of raw material collection arrangements, (2) trials to determine the optimum level and location of cleaning and pre-processing of cotton stalks, (3) pilot production of particle board, (4) pilot production of binderless fibre boards, (5) evaluation of the technical/financial feasibility of the proposed processes, (6) dissemination of project results at national and international levels.

Project Background: The project has been presented to the Common Fund for Commodities by CIRCOT (Central Institute for Research on Cotton Technology) based in Mumbai, India, through the International Cotton Advisory Committee (ICAC). The project has an overall budget of US\$ 2,190,486 of which the Common Fund contributes US\$ 918,866 while the balance is covered by counterpart contributions. CIRCOT has been designated as the "Project Executing Agency" or PEA. The PEA is responsible for the overall management, implementation, and administration of the project. The project is located in Nagpur with additional activities in Mumbai and at locations throughout India at production facilities of collaborating board manufacturers.

The rationale of the project can be found in the current low levels of income for cotton producers in India. The average yield of cotton production in India is around 1000 kg of seed cotton per hectare, which results in slightly over 300 kg of cotton lint/ha. This is far below the world average of 630 kg lint/ha. While efforts are being undertaken to increase productivity and to lower production costs wherever feasible, no major drastic improvements may be expected in the short term. In order to enable the cotton producer to increase his/her income from the field, initial efforts have been undertaken to add value to by-products which thus far were considered to be without economic value. Based upon initial laboratory and limited factory trials it appears that cotton stalks can be used commercially for hard board (binderless board) and particle board production. Estimates indicate that in this manner an additional income of some five percent or more could be realised for the cotton farmer. In addition, use of cotton stalks as base material for particle board production would have a positive environmental impact, as it would reduce the need for wood for this type of industrial purposes, thereby contributing to the slowing down of deforestation processes.

The proposed pilot production unit will have an estimated production capacity of 1 ton/day, which is expected to be the minimum size/capacity to demonstrate (on reduced scale) the actual production process. Most board manufacturing units in India have a

production capacity of 30 – 60 tons/day. Preliminary assessments undertaken in a cotton stalks availability study indicated that on an average a cotton stalk production of around 3 tons/ha can be expected, which, allowing for losses during pre-cleaning, chopping and transportation would still amount to 1.0 – 1.5 tons of stalks/ha. A production unit of 30 tons/day would thus require a “catchment” area of around 9,000 ha (meaning an area with a radius of some 10 km around the factory). Larger production units require larger catchment areas and thus possibly more elaborated supply arrangements. With Indian cotton production covering some 8.5 million hectares, the availability of cotton stalks as such is not a problem. What does require to be looked into, is the economics of availability and supply for individual board making factories, taking into account their location and the “density” of cotton production in their direct environment. These are issues that will need specific analysis in the project.

The Project became operational in October 2004 and shall be completed by September 2008. The project has been described in detail in the project’s Appraisal Report (dated 25 May 2004).

### **Objective of the Evaluation**

In accordance with the requirements of the Fund, a mid-term evaluation has to be undertaken by one (or more) independent consultant(s). The evaluation shall comprise, but shall not be limited to, of an assessment of the progress made with respect to implementation of the project, the prospects for reaching the targets set therefor and proposals for any corrective measures required.

The main objective of the mid term evaluation is to make an overall assessment of the effectiveness and efficiency with which the project is being implemented and, in particular, to provide a detailed assessment of the achievements made and overall results obtained so far. The evaluation shall specifically focus on the likelihood of achieving the expected results through implementation of the project activities as currently foreseen. Due attention shall thereby be given to issues of sustainability *cum* commercial attractiveness of the production of boards on the basis of cotton stalks. Adequate attentions shall thereby be given to, on the one hand, securing an additional income for cotton farmers/land labourers while, on the other hand, assessing whether a viable industrial activity can be set-up (be it as a stand-alone facility (fully relying on cotton stalks as basis for its production) or integrated in existing board making production units that also use other natural fibres as basis for production).

While the emphasis will be on the project as it has been designed and implemented thus far, the consultant(s) should also assess the considerations that have led to the design of the project itself, given the stated objective of the project, and comment on the perceived usefulness/appropriateness of the various components (as well as the explicit and/or implicit assumptions underlying the current design).

Where necessary and feasible, recommendations for additional or revised activities for the remaining operational period for the project should be given, taking into account the remaining funds and time.

### **Composition of the Mission**

The mission will consist of one or two independent experts with extensive knowledge and experience in particle and hard board manufacturing in the Indian sub-region. This should have been obtained at the scientific/research level as well as at the level of the actual commercial production environment. In addition, at least one member of the team

should have sound knowledge and understanding of small-scale cotton production economics.

The consultants will be contracted by the Fund for the duration of the mission. The Project Executing Agency will organise the travel programme of the mission in consultation with the Fund and ICAC as appropriate.

### **Programme of Work**

The basis of the assessment will be the project design, budgeting and implementation arrangements as described in the Appraisal Report, the subsequently produced Annual Work Programmes and Budgets and in the Progress and Technical Reports prepared during implementation.

The consultants will visit project locations in India (i.e Nagpur, Mumbai and possibly two/three other locations to be proposed by the PEA based on the scale of project activities and logistics). The organizations/activity sites to be visited will be included in the travel programme currently being prepared. In view of the visits to locations where the uprooting and processing cotton stalks can be observed, the fielding of the mission is envisaged for the week starting 19 November 2007. The final travel programme will be prepared by the PEA in consultation with the members of the evaluation team.

Total time requirement for the mission to be in the field will be maximum 7 days, including one day of presenting provisional findings to the PEA and possibly other parties involved in the project. Preparation time is expected to be two days in the home office while an additional two days in the home office may be allocated for report writing. In case of a two-(wo)man mission, the team leader may add one day for consolidation of the report. Total time requirement for the overall mission should thus not exceed 23 days (excluding mobilization travel).

The PEA will provide the consultant(s) with the following documentation, after finalisation of the contractual arrangements:

- Appraisal Report;
- Technical and other reports prepared by consultants during the preparation phase of the project;
- Progress Reports as produced by the PEA;
- Annual Work Programmes and Budgets for project year 1, 2 and 3;
- Published and In Press papers arising from the project;
- Records of meetings of the Annual Review Meetings if and as deemed relevant by the PEA.
- Other documents as required and available.

### **Reporting**

The report will be the report of the independent evaluation mission and may not necessarily reflect the views of the Fund, the ICAC or the PEA. The main findings and preliminary conclusions of the mission, however, will (to the extent feasible) be discussed with the concerned parties prior to their departure from the various project locations and, where possible, consensus on conclusions will be achieved.

To facilitate adequate presentation of the draft mission report, it is envisaged that after concluding the field visits, the team will present its provisional findings in Nagpur or Mumbai to the PEA and other parties as deemed relevant (including if feasible ICAC and CFC). The team leader shall be responsible for the final drafting and editing of the report, which shall be submitted in draft to CFC, ICAC and the PEA within two weeks

following the mission's departure from Mumbai/Nagpur. After having considered the possible comments/observations from the three parties, the team leader shall finalize the report as deemed appropriate.

The final report shall include an Executive Summary (highlighting key findings and recommendations of the mission), as well as separate sections on project design, scientific/technical approach, implementation arrangements, quality of the activities undertaken, assessment of results obtained thus far, perspectives for a substantive impact and findings and recommendations. Annexes like Terms of Reference, etc. will be attached. One Annex shall specify all meetings held, including dates, names and positions of people met and subject of discussions. The length of the report should normally be in the range of 20 - 40 pages (excluding annexes). The report will be submitted, in ten copies and on diskette/CD (in MS Word) to the Fund not later than two weeks after the team leader has received the comments from the three parties. The Fund will arrange for further distribution of the report to the IJSG, the PEA and the Collaborating Institutions.

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