



कोयर् बोर्ड Coir Board

(सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय, भारत सरकार
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OPERATIONAL GUIDELINES OF CENTRAL SECTOR SCHEME OF SCIENCE AND TECHNOLOGY OF THE COIR BOARD – XII PLAN

Introduction

The Research and Development activities of the Board are carried out through the research institutes namely, Central Coir Research Institute (CCRI), Kalavoor and Central Institute of Coir Technology (CICT), Bangalore. The Central Coir Research Institute, Alleppey was established in 1959 and the Central institute of Coir Technology, Bangalore in 1980.

Whereas CCRI, Kalavoor concentrates on research concerning both the white and brown fibre sectors, CICT, Bangalore confines to the brown fibre sector. Identification of new user areas for utilization of coir and coir waste (coir pith), modernization of production infrastructure for elimination of drudgery in manual operation thereby attaining higher productivity and improvement in quality are integral parts of the research efforts. Research investigations in the Institutes have led to development of several new technologies for the coir industry and it has been awarded the prestigious National Research and Development Corporation (NRDC) Technology Awards thrice for innovations in 1999, 2002 and 2004. The recent achievements of the Board include development of a versatile loom, named as “Anupam”, for manufacturing various coir products with ease and higher productivity and development of a technology for pollution free retting and a mobile fibre extraction machine (SWARNA) which can be transported easily from one place to another according to availability of husk.

During the year the Board developed a versatile spinning machine (VAJRA) for making coir yarn out of coir fibre without using a core thread. The machine will give a higher output and good quality.

To modernize the coir industry, CCRI of Coir Board has designed and improved upon the traditional handloom operated by pneumatic system (UDAY). This loom can produce different types of mats, mattings, carpets and coir geotextiles easily. Women workers can easily operate this loom.

2. Extension of the outcome of the research at the laboratory level for application at the field level and extension of testing and service facility are two main areas of activity under the head. Collaborative research with research organizations, institutes, universities having proven records on varied applications of coir, development of new products, new machinery, product diversification, development of environment friendly technologies, technology transfer, incubation, testing and service facilities are the areas which are given priority consideration.

3. The Plan programmes under the Science and Technology Scheme in Coir Industry have been undertaken during the 11th Plan period through the following programmes:

- Modernization of Production Processes.
- Development of machinery and equipments.

- Product Development and Diversification.
- Development of Environment Friendly technologies.
- Technology transfer, Incubation, Testing and Service Facilities

Having reviewed the need for continuance of the above the programmes have been recast, without changing the scope of the Scheme, for implementation during 12th Plan period as detailed below:-

- Modernization of Production Processes.
- Development of machinery and equipments.
- Product Development and Diversification.
- Development of Environment Friendly technologies.
- Technology transfer, Incubation, Testing and Service Facilities.
- Incentive for using natural dyes and incentive for IPR in coir sector.

The Director RDTE, who is heading the Research Institutes CCRI & CICT of the Board, will be the nodal officer of the Plan S&T scheme.

Action Plan under different Programme Heads

a). Modernization of Production Processes

Objectives

- Modernization of extraction process of coir fibre leading to enhancement of productivity, upgradation of quality and elimination of drudgery.
- Development of appropriate technologies for improving the productivity and quality in spinning.
- Development of innovative technologies in weaving of coir products by improvisation of the production processes of fibre and equipments.
- Development of modern technologies for finishing operations of coir products.
- Modernisation of the production and extraction process through application of bio-technology.
- Development of technologies for wet processing of coir using natural dyes.

Most of the technologies used in the coir industry are of medium level. Consequently, the amount of drudgery is more and the working atmosphere is not user friendly enough for retention of a dedicated work force. The productivity and the quality of the products are not up to the mark either. Continued research activities will result increasing the acceptance of the coir products both by internal and external markets. To achieve these objectives, the following programmes would be undertaken during the XII Plan:-

- Production of coirret and pithplus: Quality improvement of coir fibre by bio-technological intervention.
- Extraction of Lignosulphonates and characterization for end uses.

- Enhancement of longevity of coir by chemical/enzymatic method.
- Coir Pith Organic Manure Production.
- Standardization of coir pith for BIS specifications
- Production of Bio-oil from Coir Pith : By setting up of a pilot scale plant
- Setting up of a pilot scale plant for the manufacture of Bio-fuel.
- Enzymatic softening and brightening of brown coir fibre.
- To create infrastructure and to undertake Civil Construction and repair works/renovation in respect of above activities through CPWD, as per the provision contained in GFR 126.

b). Development of Machinery and Equipments

- Elimination of drudgery in operations
- Improvement in productivity and quality
- Bringing about cost effectiveness

The programme aims at development of machinery for spinning coir yarn, extraction of fibre, weaving coir products etc. Most of the existing machineries are obsolete with low productivity and involve drudgery in operation. Low productivity, low technology application, reluctance to accept rapid mechanization, economic disability to modernize the sector etc. are some of the limitations for growth in the coir industry. Modernization essentially involves mechanization and application of modern processes, which necessitates developing appropriate machinery for processing of coir fibre into yarn and products with enhanced productivity.

It is proposed to achieve these objectives through the following programmes during the XII plan:

- Design and fabrication of multi head fully automatic spinning machine without using core thread and intensive field trials to get better quality and better output.
- Production of solar powered spinning ratt using non-conventional energy by ANERT: Use of wind/solar energy.
- Development of new machineries especially for production of value added products
- Popularization of Mobile defibering machine to enhance the utilization of coconut husks and providing employment to the rural entrepreneurs.
- Improvement of the Wrapping Machine.
- Indigenization of drainage pipe filter making machine
- Development of molded coir-rubber garden articles manufacturing machines.

- Development of gift articles from Coir Wood.
- To organize a mobile workshop and a centralized workshop at CCRI to attend all repair works of coir manufacturers.
- To create infrastructure and to undertake Civil Construction and repair works/renovation in respect of above activities through CPWD, as per the provisions contained in GFR 126.

c). Product Development and Diversification

Objectives

- To develop innovative products out of coir fibre alone and or by blending with other natural fibers.
- To develop new areas of application for coir products like coir geo-textiles
- To develop new technologies for utilization of coir pith
- To develop technology for use of coir in the automobile industry for seat cushions and upholstery
- To develop innovative designs suitable for mats, matting and carpets
- To construct rural roads under PMGSY using coir geo-textiles for inclusion in the manuals of PWD etc.
- To establish Design Clinics in the major coir clusters.

Future of coir industry depends on product development and diversification, especially into non-traditional areas. Development of substitutes for wood, synthetic products, geo-synthetics, combination products through blending with other natural fibres etc. would open up new vistas for the coir industry. Development of new application areas and new products are of vital importance for the full utilization of the potential of the industry.

It is proposed to achieve the listed objectives through the following programmes during the XII Plan:-

- Development of blended fine coir yarn and blended coir products with coir/sisal /cotton/ pineapple/jute etc.
- Development of Kaleens by softening of coir fibre.
- Development of rubberized coir mattresses for hospitals with covers of modified PVC sheets to make them leak proof.
- Development of treated coir fibre for fire retardancy, water/oil repellency and enhancing longevity.
- Establishment of a Pilot Plant for extraction of Natural Dyes.
- Laying of coir geotextiles for road construction and embankment protection.
- Production of coir needled felt for experiments and for the industry on service charge basis.
- Development of Coir Wood for specific end use like kitchen cabinet, drawing room furniture etc.

- Development of high tech coir fibres by nanotechnology.
- Geo drainage filters for areas lying below sea level.
- Paper from coir bit fibres.
- Binderless boards out of coir bit fibres.
- Manufacture of umbrella, footwear, shopping bags and upholstery etc.
- Setting up of processing unit for coir as a textile fabric.
- Setting up of net houses.
- To create infrastructure and to undertake Civil Construction and repair works/renovation in respect of above activities through CPWD, as per the provisions contained in GFR 126.

d). Development of Environment Friendly Technologies

Objectives

- To develop appropriate technologies for abatement of pollution in the production processes.
- To develop a cost effective eco-friendly effluent treatment technology for treating the effluents arising out of wet processing in coir industry.
- To develop technology for disposal of sludge in the ETPs.
- To develop new products like wood substitutes out of coir alone or by blending with other natural fibres.
- To standardize the coir composite products for different applications.
- To undertake studies in estimation of carbon credit by using coir products like composites, geo-textiles etc.
- To develop coir ornaments and coir toys.

The world is becoming more and more environment conscious and the need for protection of water, air and other natural resources for the posterity is being realized widely. Even though coir and its products are nature friendly in the sense that they are hundred percent degradable, research efforts have to be carried out to minimize the environmental hazards caused by retting and wet processing.

The objectives are proposed to be achieved by the following programmes in the XII Plan:

- Setting up of an Eco lab to analyse the effluents of bleaching/ dyeing, effluents of retting etc. and to develop appropriate techniques to combat the pollution.
- Adoption of Ecomark for coir products/coir composite products.
- Development of corrugated roofing sheets from coir non-woven felt/woven mat in association with IPIRTI.
- Inclusion of coir villages in the itinerary of domestic and foreign tourists.
- Strengthening of the CICT as a Centre of Excellence and development of environment friendly Coir Wood products and machinery.

- Exploration of the possibilities of varied applications of coir geo-textiles, coir composite boards, coir pith and organic compounds extracted from coir etc. in association with various R & D Institutions, Universities etc.
- Exploration of the possibilities of getting Carbon credit by using eco-friendly coir/pith/composite products as wood-substitutes in the background of Kyoto Protocol.
- Production of Natural dyes from Gall nut, Turmeric, Maju, Henna, Coir Pith, tea waste and coffee waste etc,
- To create infrastructure and to undertake Civil Construction and repair works/renovation in respect of above activities through CPWD, as per the provisions contained in GFR 126.

e) Technology Transfer, Incubation, Testing and Service Facilities

Objectives

- To transfer the technologies developed by the research institutes to the trade against specific requests and under agreement of technology transfer by realising appropriate fees.
- To establish technology incubation centers in one or many places for training the entrepreneurs in the new technologies developed and transferred.
- To create a tool room for maintenance of and repair of the looms and equipments established in different coir production centers.
- To establish a laboratory for testing coir composite materials and to extend service facilities to the trade.
- To demonstrate the user friendly technologies and machineries developed by CCRI/CICT in the major coir yarn production centers for the benefit of the workers/entrepreneurs.
- To extend technical assistance for interventions in clusters identified by the Board in different coir producing States.
- To undertake testing of coir and coir products, dyed samples, coir pith etc. at the laboratories of CCRI, CICT and Regional Officers and issue test certificates.
- To extend service facilities to the trade in dyeing of coir yarn/fibre at the dye house established at the CCRI.
- To undertake civil/electrical infrastructure support required for the research institutes through Government authorities

The result of the research activities need to be disseminated to the industry and trade and diversified uses of coir and coir products have to be popularized through demonstration in

the field for increasing the demand of coir. There is a need of services like testing and certification facilities required by the industry.

It is proposed to achieve the objectives through the programmes detailed below during the XII Plan:

- Bleaching, dyeing and drying of coir yarn/fibre and shade matching by extending the facilities available in the modern dye house of CCRI.
- Testing of coir and coir products as per National/ International standards
- Testing of NPK content of composted coir pith lignin content, salinity and electrical conductivity and phytosanitary tests.
- Evaluation of dye-stuffs suitable for coir.
- Evolving novel designs and sale of copies of design cards using CAD system.
- Evolving standard specifications for different coir products.
- Upgradation of quality of coir products through field extension programmes and
- Improvement of the skills of artisans.
- Digitalization of National Coir Information Centre and the information centre at the CICT to create and operate a digital library capable of providing digital information from text, images, electronics media etc.
- Getting NABL accreditation to the physical and pith testing laboratory of CICT.
- Transfer of Technologies developed by the Coir Board to the industry and extension service
- To extend the facilities available in the Institute to the trade on realization of service charges.
- To conduct special HRD programmes in generic areas like TQM, production and marketing management, rural entrepreneurship development etc. for preparing and continuously upgrading the technologies and other related information.
- To create infrastructure and to undertake Civil Construction and repair works/renovation in respect of above activities through CPWD, as per the provisions contained in GFR 126.

f). Incentive for using natural dyes and incentive for IPR in coir sector.

Objectives

The recent development to use natural dyes in coir sector is becoming popular as a part of using these natural dyes Coir Board has setup a natural dye extraction plant and the product will be distributed to coir sector as measures to improve the use of natural dyes.

The entrepreneurs are developing new products/technologies for coir processing. In order to encourage R&D, it is proposed to provide incentive towards filing of IPR.

- In order to encourage utilization of eco-friendly technology of natural dyeing of coir in the Coir Industry, a 50% financial assistance will be given as incentive to all entrepreneurs who will utilize/set up units for using new technology of production/application of natural dyes on coir subject to a maximum amount of Rs.5.00

lakhs with the approval of a high level steering committee chaired by the Director, RDTE and recommended to the Chairman/Executive committee/Board for approval.

- In order to encourage the R&D in coir sector, 50% financial assistance will be given as incentive to the coir entrepreneurs for filing IPR for new products/processes/machines subject to a maximum amount of Rs.5.00 lakhs with the approval of a high level steering committee chaired by the Director, RDTE and recommended to the Chairman/Executive committee/Board for approval.

Phasing of expenditure in the XII Plan for each Project of the Scheme is given below: (Recurring)

Rs. in lakhs

Sl. No	Programme	Intervention	2012-13 (Actual)	2013-14 BE.	2014-15	2015-16	2016-17	Total
1	Modernization of Production Processes	Modernization of production process	13.59	150.00	175.00	300.00	421.41	1060.00
2	Development of machinery and equipments	Development of new machines	33.40	115.00	170.00	361.60	320.00	1000.00
3	Product Development and Diversification	Product development & diversification	56.73	140.00	130.00	350.00	343.27	1020.00
4	Development of Environment friendly technologies	Development of environment friendly technologies	10.59	185.00	143.00	350.00	441.41	1130.00
5	Technology Transfer, Incubation, Testing and Service Facilities	i) Field demonstration of technology. ii) Transfer of eco-friendly technologies iii) Transfer of technology to mahiner manufacturers. iv) New clusters to be provided with technological support v) Field demonstration of technologies. vi) Extension of testing and services facility	163.66	110.00	175.00	150.00	171.34	770.00
6	Incentive for using natural dyes and incentive for IPR in Coir Sector (New component)	Incentive for using natural dyes and incentive for IPR in Coir Sector	nil	Nil	7.00	6.00	7.00	20.00
	Total	Total	277.97	700.00	800.00	1517.60	1704.43	5000.00

The funds will be released to the Research Institutes through Coir Board on quarterly basis on certification of utilization of funds released earlier. The funds will be utilized by the Research Institutes for R&D activities and creation of infrastructure & Civil construction / repairs etc. relating to R&D activities only as specified in the Action Plan under different Programme Heads of the Scheme.

- The lumpsum amount is to be released in each quarter based on the sanctioned budget for each year, instead of sanctioning the funds project wise for speedier implementation of the projects under the scheme.
- Technology transfer may be done through National Research Development Corporation (NRDC), Govt. of India, New Delhi.
- While incurring expenditure the provisions of GFR and other rules and regulations applicable under the Government from time to time shall be applied.

Research institutes will prepare proposals for various R&D activities including projects, creation of infrastructural facilities, civil constructions, repairs and maintenance etc. with the approval of competent authority. Board will prioritize the fund requirement and submit to the Ministry on quarterly and lumpsum basis.

- Experts from national R&D institutes having expertise in the relevant fields may be invited for validating the project proposals before approval of the Science and Technology Committee/Board.
- The Research Institutes of the Board will undertake collaborative research projects with other recognized institutions who are interested to have research projects related with coir and its allied products.
- Research efforts will be perused through public private partnership basis after giving due transparency.
- If necessary, the collaborators of the projects will be invited for making presentation on the project before the Board.
- Preference will be given to the collaborators having experience of research works pertaining to coir or any other natural fibre.
- The outcome of the project must be for the benefit of the coir industry
- The collaborating institute should provide counterpart contribution in terms of kind or cash for the project.
- A Project Review Committee and Advisory Committee, equally represented by the Board and the collaborating institute may be constituted by mutual discussions and agreement, to assist the institutes hereto in the implementation of the project.
- The Project Review Committee shall meet periodically (at least once in three months) and review the project and recommend for release of Board's share for conducting the project.
- The Chairman, Coir Board shall be the appellate authority and his decision on all matters connected with the project shall be final and binding on both the parties.

- In the case of collaborative projects tenure will be specific and an MoU will be signed between the Board and the collaborator.
- There will be nodal officers for all the collaborative projects who will function under the Director, RDTE. The collaborative projects should be monitored by the nodal officers effectively and the progress report of each of the collaborative projects should be submitted by the Director, RDTE before the S&T Committee/ Board Meeting with due recommendation of the review and advisory committee in time.
- Organizing meetings or conclaves like Global Coir Forum at national and international levels for popularizing the technologies and developments achieved in the coir industry and for international co-operation.
- Local research and educational institutions who are interested in the development of coir industry may be permitted to utilize the facilities available in the well equipped laboratories in the research institutes of the Board.
- 25 S&T graduates may be identified and sponsored them to institutions such as NISME and NID for training in enterprise and technological management. They may be engaged initially for a period of one year with reasonable honorarium and where necessary their services may be regularize.
- Data base may be prepared and upgraded on available technologies as well as RDTE experts available in the country and outstanding consultants may be identified.
- Building two-way linkages with RDTE experts and field level units.
- Constantly improving the quality of coir products and facilitating the compliance with pertinent standards.
- Identify a few products on which major thrust would be given in a well coordinated manner for the increase in their market penetration.

Development “outcomes” and “outputs” of the scheme/project

The Scheme being a Research & Development Activity, the outcome of the Scheme may not be measured in financial terms but the expected outcome of the Scheme are as detailed below:

- Continued implementation of the Scheme will result in development of new technologies for reducing drudgery and improving the quality and productivity of the coir products. Continued research activities will result in increasing the acceptance of the coir products both by internal and external markets.
- The main outcome is the development of Coir Wood a wood substitute, which brings down deforestation.
- The development of more sophisticated machinery with the features of automation will result in enhanced productivity and income. Elimination of physical strain and

better income would attract younger generation to engage themselves into coir activities.

- The use of coir products for environment friendly activities will result in environment protection.
- Development of new products and identification of new areas for application of coir will result in the generation of more national income from a waste material.
- The major outcome of the schemes are:
 - Popularization of Composting of coir pith
 - Popularization of Bio-Chemical softening of coir fibre
 - Setting up of a pilot scale plant for production of Bio fuel
 - Setting up of a pilot scale plant for the manufacture of Bio oil
 - Manufacture and popularization of 'SWARNA' mobile fibre extraction machine
 - Production of solar powered spinning ratt using non conventional energy
 - Manufacturing of 'VAJRA' fully automatic spinning machine
 - Manufacturing of fine fabric using coir blended with other hard fibres
 - Manufacturing of Umbrella, footwares, shopping /conference bags etc using coir.
 - Setting up of a processing unit for coir as a textile fabric
 - Setting up of net houses
 - Production of Natural dyes.
 - New machines to be developed for the Coir Industry.
 - Eco-friendly technology to be transferred to 120 entrepreneurs.
 - New coir clusters to be provided technological support.
 - New Technologies to be transferred to machinery manufacturers which lead to economic utilization of coir.
 - Field demonstrations of technologies in coir producing areas
 - Other areas of research outcomes attended by CCRI/CICT with due approval of competent authority

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