

## COLLABORATIVE/IN-HOUSE PROJECTS AT CCRI & CICT As ON 01.03.2019

Sl. No	Name of the Project	Collaborative Agency and Nodal Officer from CCRI/ CICT	Duration the project	Date of signing of MoU	Status
1.	Development of coir silk, vertical blinds and carpet backing using coir scrim fabric.	IICT, Bhadohi	1 year	1 <sup>st</sup> phase 8.1.2014 2 <sup>nd</sup> phase 14.1.2015	Settlement has been forwarded in 2016.
2.	Standardization of Binderless Boards from coir pith.	SA(Poly) In house project	One year	N.A	Project tenure completed. Testing of the binderless boards for characterization is ongoing and will be settled at the earliest. Completed the project. Shall be settled Before 31.03.19
3.	Operationalization of Library/ASTM/Hydraulic Lab at CCRI-engagement of personnel on contract basis.	SA(Poly) In house project	Three years (2015-2018)	N.A.	The project is ongoing by engaging project assistants
4.	Converting of coir pith hillocks in chirayinkeezhu Taluk into manure by using pith plus	In house	50 days		Project Completed
5.	To study the potential of nanocellulose extracted from coir for application in bio medical industry	In- house	2 years	NA	Project is Continuing
6.	Development of Coir-pith based Formulations for Agri/Horti Enduse	FACT, Kochi.	One year	30.9.2011	Project is being concluded

7.	Project on Extraction of Bio-oils from Coir pith”	In-House	2 year.	NA	Project is concluded Funds has been re-appropriated.
8.	Pilot Scale Laboratory for the production of Pithplus/Coir ret/C-pom in CCRI/ CICT/ RO's (Pollachi, Rajamundry & Bhubaneswar) SA(Micro)	In-House	5 years.	NA	Ongoing
9.	Graft Co-polymerization of Methyl Methacrylate on to coir fibre for quality improvement	In house project CCRI	2 years and Ongoing  Grafting done on coir fibre. Optimized the reaction conditions. Found improvement in the tensile strength, density, flexural rigidity and colour fastness. Grafting conducted on coir yarn under the optimized reaction conditions. The strength of grafted and control yarn were determined in dry and wet conditions using tensile testing machine. Grafted yarn shown improvement in tensile strength both in wet and dry conditions. One international paper published in CORD. Second paper is now under review for publication	N.A.	2 years and completed the project & Grafting done on coir fibre. Optimized the reaction conditions. Found improvement in the tensile strength, density, flexural rigidity and colour fastness. Grafting conducted on coir yarn under the optimized reaction conditions. The strength of grafted and control yarn were determined in dry and wet conditions using tensile testing machine. Grafted yarn shown improvement in tensile strength both in wet and dry conditions. Two international paper published in CORD. Second paper is now under review for publication. Project assistant joined in the project and purchase of equipment for bulk grafting completed the scaling up of the study by grafting on to coir yarn is in progress. Grafting of coir geotextiles were completed and enhancement of longevity studies are conducted.
10	Design and fabrication of a hydraulic press for the manufacture of gift articles	In house		214 <sup>th</sup> Board 23.09.2013	Project is continuing in Banglore ,CICT.
11	Design and fabrication of garden article making machine with dies	In house		214 <sup>th</sup> Board 23.09.2013	Project is continuing in Banglore ,CICT.

12	Development of coir fibre reinforced green polymeric composites for Injection molding process	Centre for Bio Polymeric Science & Technology	6 months	217 <sup>th</sup> Board dtd 23.06.2014  Rs.4,50,000/-	Completed and documents were forwarded for settlement to HO on 01.06.17
13	Project on Green house cultivation of plants using coir pith as a medium for cultivation	In-house	2 years	209 <sup>th</sup> Board dtd 29.06.2012	CICT
14	Demonstration of Cpom /Geotextiles application in the garden /campus of CICT by planting of new sapling /flowering plants so as to avoid the growth of bushes /weeds in the campus of CICT. SSO(CICT)	In house	3 years	211 <sup>th</sup> Board dtd 02.01.2013	CICT
15	Manufacture of five sets of kitchen cabinet, bedroom, wardrobes, office tables and sofa sets SSO(CICT)	In house	-	212 <sup>th</sup> Board Dtd 21.03.2013	CICT
16	Setting up of the coir composite testing lab at CICT. (IPIRITI) SSO(CICT)	IPIRTI		178 <sup>th</sup> Board dtd 17.11.04 & 196 <sup>th</sup> dtd 28.02.09	CICT
17	Collaborative project for the Development of coir spinning machine in association with Federation of Indian Coir Exporters association (FICEA)	FICEA		217 <sup>th</sup> Board dtd.23.6.2014	Project is completed and final report & UC awaited

18	Development of coir fibre reinforced Green Polymeric composites for injection moulding products	Centre for Bio Polymer Science & Technology (CBPST)	217 <sup>th</sup> Board dtd 23.06.2014	6 months	Item repeating details furnished on Sl. No.17
19	Design Development & Prototyping of coir furniture using coir composite panel	M/s. Kerala Furniture Consortium Pvt. Ltd	C A order dtd 10.02.2015	Extended up to June 30 <sup>th</sup> 2016	Project being settled.
20	Performance Evaluation of coir geotextiles in rural roads of Kerala.	College of Engineering Trivandrum	31.03.2011 for 3 years & further extended for 2 years	Rs.261.82 Lakhs as project fee & material cost	Partial settlement completed.
21	Pavement performance studies on coir geo textiles reinforced in rural roads in Tamil Nadu.	National Institute of Technology, Trichy.	31.03.2011 for 3 years & further extended for 2 years	Rs.419.87lakhs as project fee & coir geotextiles	Performance evaluation of the roads going on
22	Study of long term performance of pavement.	National Institute of Technology, Kozhikode	31.03.2011 for 3 years & further extended for 2 years	Rs.252.01 Lakhs as project fee & material cost	Extended upto 31.03.19 Performance evaluation of the roads going on
23	Performance Evaluation of Application of coir geotextiles in rural roads in MP .	Maulana Azad National Institute of Technology, (MANIT) Bhopal	31.03.2011 for 3 years & further extended for 2 years	Rs.433.90 Lakhs as project fee & material cost	Extended upto June2019.Performance evaluation of the roads going on

24	Use of coir pith for airport soft arrestor system	National Institute of Technology, Kozhikode	31.03.2011 for 3 year	Rs.113.12 lakhs	Collaborated has been requested to wind up the project & to settle the accounts.
25	Development of Commercial bioformulation of plant growth promoting Rhizobacteria (PGPR) using coir pith as carrier	NEIST, Jorhat	2 years	Rs.22.14 lakh	On going
26	Development for appropriate product by studying the possible use of coir dust in oil industry with reference to North-East India for absorption of oil spill (NEIST, Jorhat).	NEIST, Jorhat	for 3 years	Rs.53.13 lakh	On going
27	Potential application of Biodegraded coir pith (C-POM) for setting up of Roof/Home/Vertical garden	In-House	219 <sup>th</sup> dtd.30.3.2014 2 yrs	Rs.14.10 lakhs	
28	Setting up of pilot plant in the coir technology incubation center for manufacture of Hand Made Paper from coir fibre at CCRI	In-House	216 <sup>th</sup> 25.3.2014	One year	Completed
29	Advance for ascertaining the production performance of pilot unit for manufacturing PVC tufted coir mats	In-House	216 <sup>th</sup> dtd.25.3.2014	50 working days	Completed
30	A technology development for the production of particle board using tender coconut fibre.	PSG Polytechnic College	169 <sup>th</sup> Board dtd.24.1.2003		Completed

31	Compact platform mounted portable fibre extraction unit	PSG College, Coimbatore	170 <sup>th</sup> Board dtd.17.3.2003		Completed.
32	Studies on coir pith as an adsorbent in pollutant removal from waste water	College of Engineering., Trivandrum	30.12.2015	30.5.2016	To be released on 26 <sup>th</sup> march 2019
33	Standardization and improvisation of the technology of fibre magic treatment of machine extracted green husk and dry husk fibre	In – house	216 <sup>th</sup> meeting dtd.25.3.2014		Project continuing
34	Standardization of sodium lignosulphonate from coir pith.	In- house			Project completed being settled.
35	Towards the advance for organizing field level Mobile Tool Room service facility	In-house	209 <sup>th</sup> dtd.29.6.2012 (1 year)		Clarification for the settlement of the project has been forwarded to HO on 13.03.2019
36	Running and monitoring of the tool room and mechanical workshop for the common facility services and research engagement of technical staff at CCRI/CICT	In- house	213 <sup>th</sup> dtd.28.6.2013		Clarification for the settlement of the project has been forwarded to HO on 13.03.2019
37	Purchase of Pneumatic items & Air compressor for mat loom to convert in to Uday Loom at 20 socieites	In- house	211 <sup>th</sup> dtd.2.1.2013		Settled with HO vide Ad.Sn. No. 377 dated 15.02.2018
38	Conversion of wooden handloom for mats and mattings to pneumatic system for imparting training at NCT & DC	In- house	210 <sup>th</sup> dtd.5.10.2012 (89 working days)		Settled with HO vide Ad.Sn. No. 383 dated 03.03.2017
39	Development of an efficient, user –friendly modified version of mobile fibre extraction machine(Swarna) for production of good quality coir fibre	In- house	219 <sup>th</sup> dtd.30.3.2016 (1 year)	Rs.783000.00	Completed but trial runs are going on

40	Technical upgradation of Anugraha loom for the development of a fully automatic power loom to weave coir geo textiles	In-house	219 <sup>th</sup> dtd.30.3.2016 (1 year)	Rs. 973000.00	Completed and settlement is forwarded to HO on 12.03.2019
41	Setting up of preprocessing unit for slivering of the coir fibre before spinning of a uniform quality coir yarn	In- House	219 <sup>th</sup> dtd.30.3.2016 (Initially for 1 year)	Rs. 1412000.00	Completed and settlement is forwarded to HO on 12.03.2019
42	Bio plastics from Poly(lactic acid) coir composites	NIIST, Trivandrum	Extended for six months upto July 18	Rs. 1058000.00	Six month extension and the extension with out additional financial commitments has been approved and ratified in the 227 <sup>th</sup> Board meeting. Project has completed and the final review meeting and presentation were conducted on 13.11.18
43	Potential application of biodegraded coir pith(C-pom) for setting up of Roof/Home/Vertical garden	In-house	219 <sup>th</sup> dtd.30.3.2016	Rs.14.10 lakhs	Partial settled
44	Project for modification of coir fibre for value added application	In-house	219 <sup>th</sup> dtd.30.3.2016	Rs.2.75 lakhs	Work is ongoing by conducting surface modification of coir fibre and property evaluation
45	Project for production of lignin based glues for the manufacturing of process panel board	In-house	219 <sup>th</sup> dtd.30.3.2016	Rs.5.65 lakhs +35000/-	Completed the tenure of the project. Developed different resin combinations. Adhesive property evaluation is going on. Bulk extraction of resin is going on for evaluating the performance on coir wood .
46	Development of process and machinery for spinning of fine quality yarn of uniform thickness and reduced hairiness	MGR University	222 <sup>nd</sup> dtd.26.11.16	Rs.299 lakhs	Project continuing
47	Development of coir based camouflage scrim netting with CUSAT	CUSAT	222 <sup>nd</sup> dtd.26.11.16	Rs.8.70 lakhs	Due to delay in execution by the collaborator the project has been canceled and settled

48	Development of research & training centre for tannery waste treatment using coirpith and effective microorganisms to convert it into organic manure with BDU	BDU,Tiruchi rappalli	222 <sup>nd</sup> dtd.26.11.16	Rs. 15,31,800.00 lakhs	Ongoing
49	Development of flexible composite material using coconut husk and leather waste for industrial application with NEIST	NEIST, Jorhat	222 <sup>nd</sup> dtd.26.11.16	Rs. 40,02,800.00 lakhs	Project continuing
50	Establishment of an aquaponics system in the CCRI campus and conduction of experimental analysis on the same using composted coir pith as a growth medium	SOREVA, Mumbai	222 <sup>nd</sup> dtd.26.11.16	Rs.18.65 lakhs	Project Completed & balance amount refunded to HO.
51	Project for development of flame retardant rubberized coir for cushioning application in Railway standards	In-house	222 <sup>nd</sup> dtd.26.11.16 Extended for six more months	Rs.19.30 lakhs	Project continuing
52	Product development in coir development of a low cost coir composite	In-house	222 <sup>nd</sup> dtd.26.11.16	Rs.14.64 lakhs	CICT
53	Imparting R&D guidance & technical assistance/ extension service to the coir composite units	In-house	222 <sup>nd</sup> dtd.26.11.16	Rs.10.04 lakhs	CICT
54	Establishment of model demonstration centres for showcasing the R&D achievements of the Board at CCRI and CICT	In-house	222 <sup>nd</sup> dtd.26.11.16	Rs.47.48 lakhs	CICT
55	Standardisation of krishimithra for agri/horti end uses and popularization in coconut growing states	In-house	222 <sup>nd</sup> dtd.26.11.16	Rs.19.72 lakhs	Ongoing
56	Study on nanocellulose extracted from coir pith/coir fibre for hygiene and absorbant product	In-house	222 <sup>nd</sup> dtd.26.11.16	Rs.12.04 lakhs	Ongoing



57	Scaling up of the process of extraction of sodium lignosulphonate from coir pith or diversified application	In-house	222 <sup>nd</sup> dtd.26.11.16	Rs.8.70 lakhs	Project is ongoing Amount Utilized - 6,10,524.4
58	Project on Development & Standardisation of coir plastic composite (CPC)	IMC ,Kochi	223 <sup>rd</sup> dtd.18.3.17	Rs.9.80 lakhs + GST	Ongoing. Conducted the first review meeting on 22.02.18. IMC in association with the WPC industry partner in Ahmedabad could develop 18mm thick CPC Boards with 25% Coir reinforcements by extrusion. Apart from that they have experimented some panel structures from coir. IMC has reported that for the testing of the CPC at CBPST, CIPET requires the production of 6mm thick boards and the process for the same are also in progress. During the review meeting held on 22.02.18, IMC, Kochin has reported that the due to the machine breakdown during the trial production the project got delayed and requested for six months extension of the project for the completion of the project without additional funds other than the sanctioned funds
59	Extension of the tenure of the project setting up of a preprocessing unit for slivering of coir fibre before spinning of uniform quality coir yarn	In-house	224 <sup>th</sup> dtd.10.6.17	Rs.6,53,888/-	Completed and settlement is forwarded to HO on 12.03.2019
60	Extension of the tenure of the project Development of an efficient user friendly modified version of MFEM(Swarna) for production of good quality coir fibre	In-house	224 <sup>th</sup> dtd.10.6.17	Rs.2,92,062/-	Completed but trial runs are going on
61	Extension of the tenure of the project Development and upgradation of Anugraha loom to fully automatic power loom to weave coir geotextiles	In-house	224 <sup>th</sup> dtd.10.6.17	Rs.3,25,228/-	Completed and settlement is forwarded to HO on 12.03.2019.

62	Extension of the project for production of lignin based glues for the manufacturing of process panel board	In-house	225 <sup>th</sup> dtd.26.9.2017	Rs.35,000/-	Project continuing
63	Project on product design and development of value added bit coir fibre reinforced fully green polymeric composites for automatic and domestic application with CBPST, CIPET, Kochi	In-house	225 <sup>th</sup> dtd.26.9.2017	Rs.29.14 lakhs	Project continuing First installment released on 02.06.18 and works are ongoing. Submitted the six month report and UC. The first review meeting will conduct at the earliest.
64	Continuous production of diversified products in the product development and diversification division of CCRI	In-house	225 <sup>th</sup> dtd.26.9.2017	Rs.13.36 lakhs	Project continuing. Diversified products are Coir cotton fabrics(300mtr), Leno Weave Curtain (80 mtr), Coir Nettipattam (3nos), Lamp shade(2 nos), Coir shawl(50 nos), Yoga mat(20 nos), Coir umbrella (20 nos), Handicraft (20 sets)Coir Bags (40 nos), Coir Chappels (10 nos). Revenue Generation of Rs.19,770/-
65	Obtaining of NABL accreditation for the testing laboratories of CCRI & CICT	Accreditation	225 <sup>th</sup> dtd.26.9.2017	Rs.6.63 lakhs	Project continuing
66	Project on evaluation of pavement performance of coir reinforced rural roads in Tamilnadu	NIT, Trichy, TN	225 <sup>th</sup> dtd.26.9.2017	Rs.34.50 lakhs	Funds not received at CCRI
67	Continuation of training on weaving of coir products on uday and Anupam (pneumatic loom)	In-House	225 <sup>th</sup> dtd.26.9.2017	Rs.20.08 lakhs	Project Completed
68	Setting up of pilot scale plant for the extraction of sodium lignosulphonate from coir pith for diversified application	In-House	225 <sup>th</sup> dtd.26.9.2017	Rs.158.70 lakhs	ongoing

69	Revamping the production of pithplus/Biochem/ testing in the PSL set up at RO, Pollachi	In-House	225 <sup>th</sup> dtd.26.9.2017	Rs.28.65 lakhs	Ongoing Materials including Water Bath, Water Purification system purchased for Rs.10,42,390/- and procurement of Heating Mantle ,BOD Incubator, Salinometer for Rs.1,61,310/- for supply
70	Comprehensive study on the biodegradability of coir fibre based products viz coir geotextiles, coir wood, coir mattress and mattings	In-House	226 <sup>th</sup> dtd.26.9.2017	Rs.31.50 lakhs	Ongoing
71	Comparative study on the absorptive and biodegradability properties of sanitary products synthesized using nanocellulose and nanocellulose aerogels from coir fibre	In-House	226 <sup>th</sup> dtd.26.9.2017	Rs.29.14 lakhs	Project Continuing
72	Extension of the project for development of flame retardant rubberized coir for cushioning applications in railways as per RDSO standards		226 <sup>th</sup> dtd.26.9.2017	Rs. 9,26,753/-	The project is ongoing. Collected the specifications from RDSO for existing foam material. Work initiated for development of flame retardant rubberised coir. Conducted studies for surface treatments for improving flame characteristics and observed better results. Works for enhancing the flame criteria as per RDSO standards are going on. Presented the status of the works before the rubberised coir manufacturers association and guidelines were collected. Works are ongoing with the additive modifications for achieving the flame retardancy criteria
73	Development of process for the production of activated carbon from coir pith blk and its application for arsenic and fluoride removal in drinking water- Collaborative project with CSIR-NIIST, Trivandrum & CSIR-NEIST, Jorhat		222 <sup>th</sup> Board meeting held on 26.11.16  1.5 year + 6 months incubation period	Rs.52.50 lakhs CSIR- NIIST- Rs.31.20 lkhs CSIR-NEIST – Rs.21.30 lakhs	The project is ongoing. Conducted the review meeting on 13.11.18. CSIR_NEIST has developed flexible composite sheets and products from the flexible composite sheets such as foot wares, wallets etc

74	Project on Development of Jute coir blended geotextiles for application in Road and Hill slope with IJIRA, Kolkata		226 <sup>th</sup> dtd.26.9.2017	Rs.170.672 lakhs	Funds not Received at CCRI
75	Collaborative project on crowd sourced predictive analytic frame work for the International Trade of South India coir products in Ayurveda, Textile and Agriculture with School of computing science & Engg, VIT, Vellore, TN		226 <sup>th</sup> dtd.26.9.2017	Rs.3.65 lakhs	Funds not Received at CCRI
76	Running and monitoring of Engg tool room and mechanical workshop at CCRI and standardization of existing machinery developed by CCRI		226 <sup>th</sup> dtd.26.9.2017	Rs.12.78 lakhs	Project continuing
77	Behaviour of coir geotextiles stabilized sub-grade soil with special reference to transport infrastructure development collaborative project with University of Wollongong, New South Wales, Australia		227 <sup>th</sup> dtd 17.3.2018	AUS \$15,000	Ongoing
78	Study on coir pith/coir fibre nanocellulose for hygiene and absorbent products-Extension of tenure		227 <sup>th</sup> dtd 17.3.2018	Rs.1,86,851/-	Completed
79	Scaling up of the process of extraction of sodium lignosulphonate from coir pith for diversified application – Extension of tenure		227 <sup>th</sup> dtd 17.3.2018		Completed & Project being settled
80	Setting up of Ecolab including digital library, digital class room and conference hall for CCRI, Kalavoor, Alleppey		227 <sup>th</sup> dtd 17.3.2018	Rs. 19,03,85,000/-	Under Processing
81	Setting up of Ecolab including digital library and conference hall for CICT, B'lore		227 <sup>th</sup> dtd 17.3.2018	Rs. 14,06,31,500/-	Under Processing

82	Extension of Collaborative project with CSIR-NIIST, Trivandrum		227 <sup>th</sup> dtd 17.3.2018	Extended the project period of 3 projects for further 6 months w.e.f 10.1.2018 (No financial implication)	Funds not Received at CCRI.
83	Demonstration of technologies of coir wood house and coir pith organic manure(C-pom) in the Himalayan Region		227 <sup>th</sup> dtd 17.3.2018	Rs.14.10 lakhs (In principal)	Funds not Received at CCRI