FIFTEENTH KERALA LEGISLATIVE ASSEMBLY

COMMITTEE
ON
PUBLIC ACCOUNTS
(2023-2026)

SIXTY SECOND REPORT

(Presented on 26th June, 2024)

SECRETARIAT OF THE KERALA LEGISLATURE
THIRUVANANTHAPURAM
2024

FIFTEENTH KERALA LEGISLATIVE ASSEMBLY

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SIXTY SECOND REPORT

On

Action Taken by Government on the Recommendations
contained in the Twenty Second Report of the
Committee on Public Accounts (2011-2014)

934/2024.

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COMMITTEE ON PUBLIC ACCOUNTS

(2023-2026)

COMPOSITION

Chairperson :

Shri Sunny Joseph.

Members :

Shri Manjalamkuzhi Ali

Shri M. V. Govindan Master

Dr. K. T. Jaleel

Shri C. H. Kunhambu

Shri Mathew T. Thomas

Shri M. Rajagopalan

Shri P. S. Supal

Shri Thomas K. Thomas

Shri K. N. Unnikrishnan

Shri M. Vincent

Legislature Secretariat :

Dr. N. Krishna Kumar, Secretary.

Shri Selvarajan P. S., Joint Secretary

Shri Jomy K. Joseph, Deputy Secretary

Smt. Beena O. M., Under Secretary.

INTRODUCTION

I, the Chairman, Committee on Public Accounts, having been authorised by the Committee to present this Report, on their behalf present the Sixty Second Report on Action Taken by Government on the Recommendations contained in the Twenty Second Report of the Committee on Public Accounts (2011-2014).

The Committee considered and finalised this Report at the meeting held on 22nd May, 2024.

SUNNY JOSEPH,
Chairperson,
Committee on Public Accounts.

Thiruvananthapuram,
26th June, 2024.

REPORT

This report deals with the Action Taken by the Government on the recommendations contained in the 22nd Report of the Committee on Public Accounts (2011-2014).

The 22nd Report of the Committee on Public Accounts (2011-2014) was presented to the House on 13th December 2012. The Report contains eight recommendations relating to Industries Department and Transport Department. Government was addressed to furnish the Statements of Action Taken on the recommendations contained in the Report on 1-1-2013 and the final reply was received on 10-10-2022.

The Committee examined the Statements of Action Taken at its meetings held on 15-12-2016, 19-9-2018 and 16-11-2022. The Committee approved the Statements of Action Taken on the recommendations and decided not to pursue further in the light of the replies furnished by the Government.

These recommendations and Government replies are included in this Report.

INDUSTRIES DEPARTMENT

Recommendation

(Sl. No.1, Para No. 6)

The Committee expresses its displeasure over the failure in the implementation of Geo-textile Development Programme and it concludes that though many years had elapsed since the inception of the project, the department failed to develop even the standardisation of geo-textile products, which was a prerequisite for implementing the programme. Though Government order sanctioning the project stipulated that the funds would be released only on reimbursement basis, this was not seen complied with, resulting huge amount left unspent. The Committee therefore opines that GTDP was a badly designed project without proper planning and fund expended without evaluating the progress and achievement. The Committee recommends that the department examine whether any evaluation had been made over the implementation period from 2004 to 2006 and submit a detailed report to the Committee in this regard.

Action Taken

Fund was sanctioned to various agencies such as Coirfed, KSCC, FOMIL and NCRMI for implementing various Coir Geo-textiles Development projects.

NCRMI in collaboration with National Institute of Technology, Calicut during 2006-2009 has developed standardisation of various coir geo-textile. Thickness test, Puncture test and Tensile test on Standard Coir Geo-textile were conducted. The possible method to develop stiffness of the yarn and method to develop durability with respect to repeated loading was attained from the extensive data collected from experimental studies. The contributing factors for strength retention and durability of Coir products in field applications and relevant experience in the use of Coir product by field Engineers were studied and it was found that the tensile strength behaviours of Coir yarn and textiles depend on many factor and to have uniformity in testing gauge length and strain rate for testing has to be fixed. Development activities, demonstrate various application of Coir geo-textile like erosion control, road construction using Coir geo-textile etc.

Recommendation

(Sl. No. 2, Para No. 12)

The Committee concludes that the reason for the failure in the implementation of projects is lack of proper action plan and opines that steps should be taken to formulate an annual activity plan for the NCRMI rather than continuing the existing practice of providing fund for buildings and lab construction.

Action Taken

NCRMI had formulated action for implementation of GTDP using surrendered fund. The Action plan and the current status of implementation of the plan is enclosed (Annexure-1).

Recommendation

(Sl. No. 3, Para No. 13)

The Committee is displeased with the fact that the Kerala Coir Workers Welfare Fund Board (KCWWFB) had been entrusted with the distribution of willowing machine to 250 SHGs of women coir workers and its consequent failure

in achieving the target. The Committee recommends that in future, the Welfare Fund Boards should be kept away from such activities involving introduction of new technology and transfer of technology etc.

Action Taken

The Coir Workers Welfare Fund Board has remitted back the amount of ₹94,50,000 sanctioned for this purpose. Now the Board is not entrusted with such activities as recommendation by the Committee.

Recommendation

(Sl. No. 4, Para No. 14)

The Committee realizes that utilisation of funds provided for projects could not be made effectively as the department lacks sufficient scientific personnel. The Committee therefore opines that the core competency of the department could be improved by taking up some nodal research works. As a solution the Committee suggests that the Universities and Colleges should be asked to collaborate with the Coir Development Programme and the students of engineering institutions should be given scholarships for project works and provide research facility to Ph.D scholars for bringing innovative ideas in the field of suitable technology and products for the effective utilisation of fund and to derive better results in the field.

Action Taken

NCRMI had already started collaborative research work with leading research and development agencies like National Institute for interdisciplinary Science & Technology (NIIST), National Institute of Technology (NIT) Calicut, leading Engineering Colleges like College of Engineering, Trivandrum, Rajiv Gandhi Institute of Technology (RIT) Kottayam, Cochin University of science and Technology (CUSAT), Indian Institute of interior design (IIID) etc. The load displacement curve for the geo-textiles shows a marked peak pull out load. But with reduction of pull-out load at the later stage of the test associated to its shorter length, the peak values obtained in the tests and their magnitude are associated with interference mechanism between bearing members and the collapse of members that approached or entered soil regions. For getting more output in this regard, NCRMI took a collaborative project with CUSAT, which has been completed and report awaited.

A Geo-textile cell was formed by Director of Coir Development for the effective co-ordination of geo-textile project. As the employees in this cell were working under working arrangement basis from the Department of Industries & Commerce and as the appointing authority did not extend the period of working arrangement, the cell was dissolved. So effective evaluation was not made. But Director of Coir Development has held several review meetings later.

An amount of ₹1,59,11,403.75 was received by NCRMI and surrendered fund from KSCC and FOMIL. The Coirfed has not refund the unutilised fund alloted and some head like Geo-textile Development programme. The Coirfed has subsequently implemented several Geo-textile Development Programmes. The NCRMI utilised the surrendered fund to organic Treasury/ Seminars, Research and Students from various Engineering Colleges and Management Institutions are already engaged with project in NCRMI for the graduate and post graduate studies. Sanctions has also been given for an innovation and incubation cell in NCRMI.

TRANSPORT DEPARTMENT

Recommendation

(Sl. No. 5, Para No.19)

The Committee expresses its dissatisfaction over the infructuous expenditure of ₹81.93 lakh incurred for the purchase of Speed Tracers which remained idle due to in-built defects. The Committee also expresses its displeasure to the department for their negligence in taking necessary steps to get the 'speed tracers' repaired within the warranty period.

Action Taken

The equipment procured by the Motor Vehicles Department were supplied to subordinate offices with direction to conduct checking of vehicles and to report the cases detected. But the equipment were utilized only by some of the subordinate offices and on enquiry it was found that some of the equipment were faulty. The defects of the equipment were noticed in 2006 and the same was reported to the supplier during 2006 itself. [Copy of the letter addressed to the supplier M/s.Turbo Consultancy Pvt Ltd., New Delhi attached (Annexure-1)]

The Transport Commissioner informed that, even though the original suppliers of the equipment M/s.Turbo Consultancy Private Ltd. New Delhi was called for service, they did not respond at first. Therefore the security deposit of the firm was withheld informing vide letter Nos. MIT3/884/TC/2005 dated 9-7-2009 (Annexure-2) and MIT1/1583/TC/2004(19.1) dated 9-11-2009 (Annexure-3) of the Transport Commissioner.

The Transport Commissioner reported that, during February 2011 a Service Engineer was sent by the company to inspect the equipment and he found that all the equipment were in a non working state due to missing connectors and discharged batteries and due to some other minor defects of the peripherals. Therefore the firm furnished a proposal for repair of all the ten radars (speed tracers) at a total cost of ₹4.45 lakh including Annual Maintenance Contract. [Copy of the detailed proposal dated 8-4-2011 received from the supplier for repairs/ upgradation/ AMC for Laser based Speed Radars is attached (Annexure-4)]

The Transport Commissioner requested Government for funds for the repairs. But funds were not available neither in Plan Fund nor in the Road Safety Fund. And also the allocation in the Non Plan Head was also insufficient at that time, for meeting the expenses on repair of the equipment. The equipment are not in working condition at present.

In the meantime, the Vigilance and Anti-Corruption Bureau conducted an investigation regarding the allegations in purchase, installation, repair and maintenance of speed tracers and radars during 2011. The Superintendent of Police, Vigilance and Anti-Corruption Bureau, Special Investigation Unit requested on 15-7-2011 (Annexure-5) to hand over the related files as part of the investigation. Thereby the connected files of the Motor Vehicles Department were handed over to the investigation team. On 16-9-2014 the Bureau returned the files after submitting their report. The outcome of the enquiry conducted by the Vigilance & Anti corruption Bureau is awaited in the case, for initiating further action in the matter.

Recommendation

(Sl. No. 6, Para No. 20)

The Committee recommends that the department should take urgent necessary steps to obtain an additional authorization of ₹4.15 lakh required for the repair of speed tracers.

Action Taken

The Transport Commissioner has requested Government for fund for the repairs. But funds were not available neither in Plan Fund nor in the Road Safety Fund. Hence, Transport Commissioner sought for funds from the Non Plan Head. But the amount in the Non Plan Head was also insufficient at that time, for meeting the expenses on repair of the equipment.

In the 2nd report on Scrutiny of Demand for Grants for 2012-13, the Subject Committee recommended to allocate ₹5 lakh more for repair and maintenance of enforcement equipment including speed tracers, photocopiers, franking machine etc., under the Non-Plan Head of Account 2041-00-102-99-06(18) for the year 2012-13 (the Budget allocation was only ₹25000).

After consultation with Finance Department, the Transport Commissioner was directed to furnish necessary proposals for additional authorization/ re-appropriation for allocating ₹5 lakh to the said H/A, as recommended by the Subject Committee.

The Transport Commissioner reported that in the financial year 2012-13, re-appropriation/ additional authorization was not possible as the expenditure in all other Head of Accounts exceeded 90% of the Budget allocation and therefore no expenditure was incurred from the Head of Account 2041-00-102-99-06(18) in that financial year. The budget allocation of ₹25,000 was fully surrendered at the end of the financial year 2012-13. For the reason, the Transport Commissioner informed that no additional funds were necessary in the said H/A vide Lr. No. K2/15126/TC/2012 dated 13-3-2013 (Annexure-6). Hence no additional funds were provided.

During the next financial year (2013-14), the budget allocation was again ₹25,000 only. No other funds were provided for the repairs during that Financial Year.

Further Recommendation on Para No. 19 & 20

The Committee inquires as to what action had been taken against the officer responsible for the irregularities.

Action Taken

As per the recommendation of the Vigilance Department, the departmental action, under Rule 15 of KCS (CC&A) Rule 1960, was initiated against Sri Alex Paul, for the allegation that he unauthorizedly diverted the services of the Technical Committee intended for testing the equipment and tender evaluation of vehicle testing station of Kozhikode for inspecting the speed radars.

Subsequently, the incumbent retired from service on 31-5-2014. The pensionary benefits of Sri Alex Paul, Joint Transport Commissioner, who was found responsible for the irregularities in the vigilance inquiry, was withheld. Then Government continued the departmental action against him under Rule 3(b)(iii) of KSR Part III. As part of the departmental action, Government have taken a tentative decision to recover the loss to the tune of ₹9,55,000 (Rupees Nine Lakh and Fifty Five Thousand only) from him.

To recover the said amount, it has been decided to deduct ₹7 lakh from his DCRG and the remaining ₹2,55,000 from the DR portion of pension in 15 equal instalments.

Recommendation

(Sl. No.7, Para No. 21)

The Committee also recommends to re-introduce the post of Technical Advisor in the Motor Vehicles department and the Motor Vehicles Inspectors presently working in the department should be given proper training as they are not familiar enough to deal with the modern vehicles customized as 'Speed Tracer'.

Action Taken

The proposal for appointment of a Technical Advisor was not considered by Government during 2011-12, since Government, vide letter dated 2-9-2011 (Annexure-7) requested the service of an e-governance team appointed by Ministry of IT, GoI in Kerala IT Mission for assisting the Motor Vehicles Department in implementing e-governance programme and in IT related projects.

Even though the KSITM did not respond to the earlier repeated requests of Government, they have now accepted the request and assigned two persons from SeMT (State e-Mission Team) for providing consultancy service to the Motor Vehicles Department on shareable basis. The Department can avail the service of these persons on shareable basis as and when required.

In the case of speed tracers procured by the Motor Vehicles Department, as per demand made by Motor Vehicles Department, an on road training was given to the field staff during the time of supply of the speed tracers. It was also demanded from the supplier to impart intense training to officers at zonal level and the same was conducted at Thiruvananthapuram (Annexure-8). Training and inspections were done by the company many times.

The Motor Vehicles Department has made training mandatory for the purchase of new equipment. The installation works were carried out in the presence of department staff who is also trained for using the same.

Recommendation

(Sl. No. 8, Para No. 25)

The Committee recommends to examine the feasibility of making necessary changes in the design of the building for the Training Institute on Driving and Research by reducing the area to be constructed so as to avoid the time and cost over-runs.

Action Taken

The IDTR (Institute of Driver Training & Research), Kerala was set up at Edappal in Malappuram District with central assistance. As per the scheme, the Central Institute of Road Transport, Pune (CIRT) was appointed as the consultant

to provide technical consultancy and necessary assistance in the execution of the project vide G.O. (Rt.) No. 307/2004/Tran. dated 25-8-2004 (Annexure-9). The designing of the infrastructure was within the administrative control of the technical consultant CIRT. The modified design of IDTR buildings (Administrative block and Hostel) were once approved by the Governing body of Institute of Driver Training and Research in its meeting held on 25-11-2009 and the preliminary estimate was approved earlier as on 8-7-2010 and the construction works of both the buildings were completed in 2013. For the reasons stated above the feasibility in change in design of the building to avoid time and cost over-runs could not be explored.

The IDTR, Edappal was inaugurated by Minister (Forest & Transport) on 18-2-2014 and started functioning with effect from 3-3-2014.

Thiruvananthapuram
26th June, 2024

SUNNY JOSEPH,
Chairperson,
Committee on Public Accounts.

കേരള നിയമസഭാ പ്രിന്റിംഗ് പ്രസ്സ്.

Annexure- I

M-IT1/1583/TC/2004 (19.1)

Transport Commissionerate
Kerala, Thiruvananthapuram
Dated. 20.12.2006.

From

The Transport Commissioner,
Thiruvananthapuram

To

M/s Turbo Consultancy Pvt Ltd,
No. 602-604 & 609, Pragati Tower,
26, Rajendra Palace,
New Delhi – 110008.

Sir,

Sub : - Motor Vehicles Department – Supply of Laser based Radars – Mal functioning – Informing of – Reg.

Ref : - That Office Letter No. TCSPL/DSG/C-D/2006-2007 dtd. 04.12.2006.

With reference to the above, you are informed that the entire Laser based Radars but one have been installed in our Speed Tracer Vehicles. However, One Radar is completely malfunctioning and hence it has to be replaced by a new one. It is also informed that the fittings of the Radars are not working properly. Hence you are requested to rectify the defects mentioned above and replace one new Radar immediately.

Yours faithfully

Senior D.T.C & Secretary, S.T.A
For Transport Commissioner

[redacted]/TC/2004 (19.1)

Transport Commissionerate,
Kerala, Thiruvananthapuram
Dated. 25.04.2007.

Exhibit II

From

The Transport Commissioner,
Thiruvananthapuram

To

M/s Turbo Consultancy Pvt Ltd,
No. 602-604 & 609, Prasad Tower,
26, Rajendra Palace,
New Delhi – 110008

Sir,

Sub : - Motor Vehicles Dept – Laser baised Speed Traders – training to officers – requesting of – reg.

Ref : - Submission from Asst Transport Commissioner dtd. 24.04.2007.

With regard to the above, I am to inform that your firm have supplied the Laser based Speed Radars. But you have not given enough training to the officers for using the equipments. Now the equipments are installed in 6 vehicles and they are allocated to the following offices.

1. R.T.Office, Thiruvananthapuram.
2. R.T.Office, Kollam.
3. R.T.Office, Alappuzha.
4. Deputy Transport Commissioner's Office, Central Zone II, Ernakulam.
5. Deputy Transport Commissioner's Office, Central Zone II, Thrissur.
6. Deputy Transport Commissioner's Office, North Zone, Kozhikkode.

Hence you are requested to depute your staff to arrange for an extensive training to the field officers of this department regarding the total functioning of the Laser based Speed Radars at least for two days in each of the Offices. You may fix the date after contacting this Office at the earliest.

Yours faithfully

25/4/07

Senior D.T.C & Secretary, S.T.A
For Transport Commissioner

Annexure- II

No- M-IT3/884/TC/05

Transport Commissionerate,
Kerala, Thiruvananthapuram
Dated: 09-07-2009

From
The Senior DTC & Secretary, STA,
Thiruvananthapuram

To
M/s Turbo Consultancy Pvt Ltd,
602-604, Pragati Tower,
26, Rajendra Place, New Delhi-110008

Sir,

Sub:- Motor Vehicles Department- Modernisation- Purchase of Hand Held Radars- Refund of Earnest Money- reg

Ref:- 1.That Office Letter No- TCSPL/EMD-DSG/2007-08 dated 8-10-2007
2. That Office Letter No. TCSPL/EMD1-DSG/2008-2009/834 dt.12.01.2009.
3. This Office Letter of even No dated 12.12.2007, 22.05.2009.

Referring to the above, I am to inform you that this office has already informed you vide our letters cited above, that your security deposits are withheld as you have not responded to the service calls and the equipments are still unusable. Therefore I request you to make necessary arrangements to inspect the equipments and do the repair work at the earliest.

Yours faithfully,

Sd/-

Senior D.T.C & Secretary, STA,
Thiruvananthapuram.

Approved for Issue

Senior Superintendent

Annexure- III

-1383-

M-IT1/1583/TC/2004(19.1)

Transport Commissionerate,
Kerala, Thiruvananthapuram,
Dated. 09.11.2009.

From

The Transport Commissioner,
Thiruvananthapuram

To

M/s. Turbo Consultancy Pvt. Ltd,
602-604, Pragati Tower,
26, Rajendra Place, New Delhi - 110 008
Ph: 011-25760517, Fax No.: 011-25737372

Sir,

Sub :- Motor Vehicles Department - Purchase of Laser based Speed Radars- Release of E.M.D & Security Deposit - forfeiting - informing of - reg.

Ref : - That Office Letter No. TCSPL/SD1-DSG/2009-2010/384 dtd. 08.09.2009.

Referring to the above, I am to inform you that the equipments purchased from your firm are found defective. Also you have not responded to any of the service calls by this Department. Hence it is informed that you are directed to make necessary arrangements to inspect the equipments and do the repair work within 1 week failing which your Earnest Money Deposit and Security Deposit would be forfeited to the Government and your firm would be blacklisted.

Yours faithfully

o/c

Senior D.T.C (Taxation)
For Transport Commissioner

SECURITY TRAFFICSYS FAX NO. : 25737372 JUL. 13 2007 07:16PM P1

-1053-

Registered Office :602 - 604 & 509, Pragati Tower,
26, Rajendra Place, New Delhi-110008, India
Tel. : +91-11-25760517, 25760853, 25714772 Fax : +91-11-25737372
Customer Care : 91-11-25760800 Website : www.turbosecurity.com
E-mail : turbo@turbosecurity.com / jagdeva@del2.vsnl.net.in

Turbo Consultancy Services Pvt. Ltd.

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Exhibit IV

Sr. [redacted], S.T.A.
O/O [redacted]
[redacted]
Thiruvananthapuram

Subject: Training on Laser Based Speed Radar.

Dear Sir,

Please refer your Fax Message No. M-(T1/1583/TC/2004 (19.1) dated 13-7-2007 on subject cited above.

We wilde to inform you that our Sr. Customer Support Engineer Mr. R. K. Yadav has already left New Delhi fo Thiruvananthapuram. Due to prior commitments he will impart training at Thiruvananthapuram as p schedule communicated to you earlier however it will not possible to visit Thrissur to impart the training.

We request you to please call official from Thrissur to Thiruvananthapuram for training.

Yours faithfully

For Turbo Consultancy Services Pvt. Ltd.

J.S. Jagdeva

J. S. Jagdeva
Director (Operation)

Annexure- IV

JAS-ANZ

Registered Office : 602 - 604 & 509, Pragati Tower,
26, Rajendra Place, New Delhi-110008, India

Tel. : +91-11-25760517, 25760653, 25718772 Fax : +91-11-25737372
Customer Care : +91-11-25868600 Website : www.turbosecurity.com
E-mail : turbo@turbosecurity.com / jagdeva@del2.vsnl.net.in
turbo_isjs@airtelmail.in

Turbo Consultancy Services Pvt. Ltd.

Exhibit P4 6

Ref : TCSPL/Kerala-Tpt.Comm/DSP/2010-2011/ April 08, 2011 1814

MIT

Transport Commissioner
Transport Commissionerate
Kerala, Thiruvananthapuram -23.

Kind attn : Mr.Alex Paul

Sub : **Detailed proposals for Repairs/ Upgradation/Buy-Back/ AMC options for Laser Based Speed Radars with your Motor Vehicle Department**

Dear Sir,

Further to the inspection/checking carried out by our Sr.Service Engineer, Mr.R.K.Yadav of all your laser based Speed Radars and the detailed report submitted on 9th March, 2011 and your letter No.M-ITI/1584/TC/2004(19.1) dated 31.03.2011, we are pleased to submit herewith our detailed proposals/offers as per the enclosed Annexure-A and Annexure-B.

Hope you would find our offers most suitable and entrust us with your valued order.

Thanking you and looking forward to hear from you soon.

Yours faithfully,
For Turbo Consultancy Services Pvt Ltd

J.S. Jagdeva

J.S.Jagdeva
Director (Operations)

Encls: Annexure-A & Annexure-B as above.

CC : Dr.P.T.Ajith Kumar

ANNEXURE-A

OPTION-1 : (SERVICE CHARGES WITH COST OF SPARES/PARTS)

Under this option, we would be charging Rs.15,000/- per unit towards the service charges + to & fro air-fare + lodging and boarding for our Service Engineer apart from the costs of spares for site-wise Laser Radars listed below-

Sr.No.	Site :	Parts needed	Cost(Rs.)	Total Amount
1.	Alappuzha	DVD Recorder	33,000/-	
		Stand	23,000/-	
		Cable/connectors	6,000/-	
		LCD without cables	9,500/-	
		UPS & Battery	13,500/-	85,000/-
2.	Kolam	Repairs of stand	3,000/-	
		LCD	9,500/-	
		UPS/Battery	13,500/-	26,000/-
3.	Ernakulam	Remote of DVD	500/-	
		LCD	9,500/-	
		UPS & Battery	13,500/-	23,500/-
4.	Kozhikode	LCD	9,500/-	
		Battery of system	8,500/-	
		Stand	23,000/-	41,000/-
5.	DTC-Ernakulam	DVD Recorder	33,500/-	
		LCD	9,500/-	
		Stand	23,000/-	
		UPS & Battery	13,500/-	
		Cable/connectors	6,000/-	85,500/-
6.	RTO-Trivandrum	DVD Remote	500/-	
		LCD	9,500/-	
		Stand	23,000/-	
		UPS & Battery	13,500/-	
		Cables	6,000/-	
		Small DVR	21,000/-	
		DVR Recorder	20,500/-	94,000/-
Total cost of parts needed :				Rs.3,55,000/-

NB : **In case the above defective Radars are sent to our Workshop at Delhi, we shall be charging you only Rs.10000/- per Radar system towards service charges + the costs of spares listed above. Under this option, once the systems are in working condition, we would give you 15days warranty. After this warranty, we would cover these units under our Annual Maintenance Contract @ Rs.1,00,000/- per unit/annum.**

ANNEXURE-B

OPTION-II : (BUY-BACK SCHEME)

Under this option, we shall offer you buy-back scheme where we would charge you Rs.3,00,000/- per Radar, by using only the LASER unit from the old machines and replace everything else with latest state-of-the-art material with **one-year free warranty. We shall also conduct 30-days training to all your concerned users at a single point at Trivandrum.** After expiry of the one-year warranty period, systems may be covered under our Annual Maintenance Contract (AMC) as provided for under Option-I above (Refer to Annexure-A)

Annexure- V

Office of the Superintendent of Police
Vigilance and Anti Corruption Bureau,
Special Investigation Unit-I,
Thiruvananthapuram.
Dated 15.07.2011.

From

The Superintendent of Police
Vigilance and Anti Corruption Bureau,
Special Investigation Unit-I,
Thiruvananthapuram.

To

The Transport Commissioner,
Trans Tower,
Vazhuthacadu, Thiruvananthapuram.

Sir,

Sub:- Request to hand over the files related with the purchase, installation, repair and maintenance of Speed Tracers and Radars- forwarding of – reg.

Ref:- Vigilance Enquiry No. 27/10/SIU-I

Kind attention is invited to the subject and references.

A Vigilance enquiry is being conducted in this unit into the allegations of purchase, installation, repair and maintenance of Speed Tracers and Radars in the Motor Vehicle Department vide reference cited. Hence you are requested to make available files related with the purchase, installation, repair and maintenance of Speed Tracers and Radars and maintenance at an early date.

Yours faithfully,

15/7/2011

Superintendent of Police,
VACB, SIU-I, TVPM.

Annexure- VI

നം.കെ2/15126/ട്രിസ്/2012

ട്രാൻസ്പോർട്ട് കമ്മീഷണറേറ്റ്, കേരളം,
ട്രാൻസ് ടവേഴ്സ്, തിരുവനന്തപുരം,
തീയതി: 13/03/2013

പ്രേഷകൻ

ട്രാൻസ്പോർട്ട് കമ്മീഷണർ,
തിരുവനന്തപുരം

സ്വീകർത്താവ്

അഡീഷണൽ സെക്രട്ടറി & ഗവൺമെന്റ്,
ട്രാൻസ്പോർട്ട് (സി) ഡിപ്പാർട്ട്മെന്റ്,
ഗവൺമെന്റ് സെക്രട്ടറിയേറ്റ്, തിരുവനന്തപുരം.

15 MAR 2013
4245

സർ,

വിഷയം: മോട്ടോർ വാഹന വകുപ്പ് - സബ്ജക്ട് കമ്മിറ്റി V 2012-13 വിഷയത്തെ ധനാഭ്യർത്ഥനകളുടെ പരിശോധന സംബന്ധിച്ച രണ്ടാമത് റിപ്പോർട്ട് — ഇക അനുവദിക്കുന്നു സംബന്ധിച്ച്.

സൂചന:- 01/03/2013-ലെ 14490/ബി3/2012/ഗതാഗതം നമ്പർ കത്ത്

സൂചനയിലെഴുതിയ കത്ത് പ്രകാരം സബ്ജക്ട് കമ്മിറ്റി V (പൊതുമരാമത്ത്, ഗതാഗതവും വാർത്താവിനിമയവും) യുടെ ധനാഭ്യർത്ഥനകളുടെ പരിശോധന സംബന്ധിച്ച രണ്ടാമത് റിപ്പോർട്ടിലെ (2012-13) 1, 3, 4, 5 ഇനങ്ങളിന്മേൽ ധനപുനർവിനിയോഗം വഴി ഇക കണ്ടെത്തുന്നതിലേക്കായി ഇനങ്ങൾ സമർപ്പിക്കാത്തത് മറ്റ് ശീർഷകങ്ങളിൽ 90 ശതമാനത്തിലധികം ഇക ചെലവഴിച്ചിരിക്കുന്നതിനാലും ആയതിനാൽ മേൽ പറഞ്ഞ ശീർഷകങ്ങളിലേക്ക് ധനപുനർവിനിയോഗം വഴി ഇക കണ്ടെത്താൻ കഴിയില്ല എന്നതിനാലുമാണെന്നറിയിക്കുന്നു. മേൽ സൂചനയിൽ ആവശ്യപ്പെട്ടതിൻപ്രകാരം 1, 3, 4, 5 ഇനങ്ങളിന്മേൽ അനുവദിച്ചിട്ടുള്ള ഇക, ഇതുവരെ ചെലവായ ഇക, ഇടർന്ന് ഈ സാമ്പത്തിക വർഷം ആവശ്യമായ ഇക എന്നീ വിവരങ്ങൾ അറിവിലേക്കായി ചുവടെ ചേർക്കുന്നു.

ക്രമ നം	ശീർഷകം	ബഡ്ജറ്റിൽ അനുവദിച്ച ഇക (രൂപയിൽ)	ധനപുനർവിനിയോഗം വഴി കുറച്ച ഇക (രൂപയിൽ)	ഇതുവരെ ചെലവായ ഇക (രൂപയിൽ)	ഈ സാമ്പത്തിക വർഷം ആവശ്യമായ ഇക (രൂപയിൽ)
1	2041-00-001-99-04 യാത്രാ ചെലവുകൾ	9, 78, 000	0	9, 26, 800	0
2	2041-00-001-99-17 ചെറുകിട മരാമത്ത് പണികൾ	50, 000	0	0	0
3	2041-00-102-99-06- വാടക, കരം, നികുതി	32, 00, 000	2, 00, 000	29, 58, 726	0
4	2041-00-102-99-18 സംരക്ഷണം	25, 000	0	0	0

വിശ്വസ്തതയോടെ

സീനിയർ ഫിനാൻസ് ഓഫീസർ
ട്രാൻസ്പോർട്ട് കമ്മീഷണർക്കു വേണ്ടി

Annexure- VII

GOVERNMENT OF KERALA

No.2416/C3/2009/Trans. Transport (C) Department
Thiruvananthapuram, Dated: 02.09.2011.

From

The Secretary to Government

To

The Director,
Kerala State Information Technology Mission,
Vellayambalam,
Thiruvananthapuram-695 033

Sir,

Sub:- Transport Department- Help to Motor Vehicles Department in IT related areas-reg.

Ref:- Letter No.MIT-5/4963/TC/2004 dated 2.7.2011 from the Transport Commissioner, Thiruvananthapuram.

The Transport Commissioner, Thiruvananthapuram informed Government that it is very necessary to have a senior officer having good experience in Information Technology as well as electronics and related areas to assess the needs of the Department and to plan and co-ordinate the future course of the computerization process. Service of a technically competent person is highly essential in Motor Vehicles Department for faster implementation of projects like SMART MOVE, M-Governance, KSWAN, Automation of enforcement, e-payment etc. You are therefore reqested to render all help to the Motor Vehicles Department in the related areas with the assistance of e-governance team from Ministry of Information Technology, Government of India.

Yours faithfully,
SREEKUMAR N.K.
Deputy Secretary
for Secretary to Government.

Approved for Issue

Section Officer.

Annexure- VIII

M-IT1/1583/TC/2004 (19.1)

Transport Commissionerate,
Kerala, Thiruvananthapuram
Dated. 13.07.2007.

Exhibit - III

From

The Transport Commissioner,
Thiruvananthapuram

To

M/s Turbo Consultancy Pvt Ltd,
No. 602-604 & 609, Pragati Tower,
26, Rajendra Palace,
New Delhi – 110008

Sir,

Sub : - Motor Vehicles Dept – Laser based Speed Tracers – training to officers – – reg.

Ref : - That Office fax message dtd. 30.06.2007.

With reference to the above, I am to inform that the inspection of equipments and training are arranged to be conducted at Thiruvananthapuram on 16th and 17th July and at Thrissur on 18th July. 2 Speed Tracer Vehicles would be brought to this Office and 3 other vehicles, at the D.T.C's Office, Thrissur. Hence your Officer may be instructed to train the Departmental Officials in the above 2 venues. The details of the Officers to be contacted for necessary assistance is as follows:-

1. Sri.P.S. JOSE, The Deputy Transport Commissioner, South Zone, Trans Towers, Thiruvananthapuram
   Phone: Office – 0471- 2333336, Mob – 09895713977.

2. Smt. M.A. Rosamma, The Deputy Transport Commissioner, Central Zone I, Thrissur.
   Phone: Office – 0487 - 2360450, Mob - 09895713929.

Yours faithfully

13/7/07

Senior D.T.C & Secretary, S.T.A
For Transport Commissioner

Annexure- IX

GOVERNMENT OF KERALA

ABSTRACT

Institute of Driver's Training and Research at Edappal in Malappuram – Initial expense for the development of infrastructure facilities in the Project Site, Selection of an architect for designing the infrastructure and appointment ofCIRT, Pune as the consultant to the implementation of the Project – Working Group approved – Sanction accorded – Orders Issued.

TRANSPORT DEPARTMENT

G.O.(Rt) No. 307/04/TRAN. Dated, Thiruvananthapuram, 25. 8.2004.

Read: 1. Letter No.RT-25036/2/04-RSC. Dated 6.8.2004 from the Pay & Accounts Officer (Secretariat)Ministry of Road Transport & Highways, Transport Bhawan, New Delhi

2. Letter No.M-IT3/815/TC/03. dated 13.8.2004 from the Transport Commissioner, Thiruvananthapuram.

ORDER

In the letter read as Ist paper above the Pay and Accounts Officer (Secretariate), Ministry of Road Transport & Highways, Transport Bhawan, New Delhi has informed that Government of India has sanctioned financial assistance to the extent of Rs.299 lakhs in favour of Government of Kerala, as its share for setting up of the Training Institute on Driving Research at Edappal in Malappuram District , Kerala, as the scheme is a 70% Centrally Sponsored Scheme..

In the letter read above, the Transport Commissioner has informed that the department proposes to start the Project Work soon after selecting and appointing a qualified and competent architect and availing the consultancy services of an expert.

The Working Group Meeting held on 17.8.2004 has examined the matter in detail and has decided to accord sanction for incurring an expenditure of Rs.45 lakhs being the initial expense required for the development of infrastructure facilities in the project site. An architect for the designing the infrastructure shall be selected by adopting the Tender System Civil works has to be executed by following the PWD norms and schedules. It is also decided to accord sanction for the appointment of CIRT, PUNE as the consultant for the project implementation. The expenditure shall be incurred from the Head of Account 5055-800-88.

In the circumstance, Government are pleased to accord sanction for incurring expenditure of 45 lakhs being the initial expense required for the development of infrastructure facilities in the project site. The civil works should be executed by following Public Works Departments norms & schedules

Sanction is also accorded for the selection of an Architect for designing the infrastructure by adopting Tender System and also for the appointment of CIRT, Pune as the Consultant to the project implementation.

The expenditue for this purpose will be met from the provision available under the Head of Account 5055-800-88(p) in the current year's budget.

BY ORDER OF THE GOVERNOR

G. RAJASEKHARAN,

Secretary to Government

To

The Transport Commissioner

The Accountant General(A&E/Audit/D.B. Cell)Kerala, Thiruvananthapuram.

The Pay & Accounts Officer(Secretariat), Ministry of Road Transport & Highways, Transport Bhawan, New Delhi

The Finance Department.(with copy of the minutes of Working Group Meeting)

The Planning & Economic Affairs Department.(with copy of the minutes Of Working Group Meeting)

Stock File/Office Copy

Forwarded By Order

Section Officer

Annexure- X

STATEMENT SHOWING GEOTEXTILES FUND SURRENDERED BY FOMIL & KSCC

The following funds were received by NCRMI as surrendered fund from Kerala State Coir Corporation and Foammattings Ltd.

(1) Fund surrendered by KSCC (2007) - Rs. 105,19,055.75

(2) Fund surrendered by FOMIL (2007) - Rs. 42,00,015.00

(3) Fund surrendered by KSCC (2007) - Rs. 2,15,177.00

(4) Fund refunded by FOMIL- (2014) - Rs. 9,77,156.00

[Study on structural designs for construction of sea wall with indigenous technology]

Total surrendered fund received **Rs. 1,59,11,403.75**

Sl. No.	Particulars	Fund utilised (Rs.)	Remarks
1	Training Scheme on application of Coir Geotextile (2008-09)	64,629.00	Completed
2	Design & Production of seeded Coir Geotextile and its application at the premises (2008-09)	67,900.00	Completed
3	Application of Coir Geotextile on erosion control (2008-09)	5,802.00	Completed
4	Strengthening of chandranandan Road at Sabarimala using Coir Geotextile (2008-09) (2009-10)	15,834.00 2,87,057.00	Completed
5	Project Development of Coir Geotextile based Bio fillers for waste treatment to KSCC (2008-09)	1,62,500.00	Completed
6	Project on use of geofabrics for recharge of ground water (2008-09)	1,15,000.00	Completed
7	Seminar on Geotextile-Bund Construction- Kuttanad (2008-09)	75,910.50	Completed
8	Training Programme to PSU'S on Coir Geotextile by Coir Board (2008-09)	16,910.00	Completed
9	Project "Development of coir based pre fabricated liner (2008-09-Rs.200000 & 2009-10 Rs. 400000) 8,28,000-7,11,420(expended)=Rs.1,16,580/-(refunded)	7,11,420.00	Completed
10	Foam mattings (India) Ltd Coir Geotextile MDA (2008-09)	3,78,366.00	Completed

11	Project Study on Structural Design for construction of sea wall with indigenous Technology FOMIL(2008-09)	10,00,000.00	Completed
12	Demonstration project application of coir geotextile for erosion control by establishing protective vegetation & Rock patches	2,85,600.00	Completed
13	Project on laboratory studies to evaluate the feasibility of use of coconut fibre in bituminous road construction 2009-2010	1,68,540.00	Completed
14	Research Project- Studies on Development of Coir Rubber Composite Product- By NIIST	4,65,760.00	Completed
15	Process Development for the softening of coconut husks-Pelican Bio-Tec and Chemical Lab	2,54,200.00	Completed
16	Road construction-Rajiv Gandhi Indoor Stadium,Konni	1,97,910.00	Completed
17	Construction of Kottarathilpadi Nalloorpadi road using coir geotextile in Enadimangalam Panchayath, Pathanamthitta District	24,48,502	Completed
18	Construction of Ambedkar Colony road using coir geotextile in Valikode panchayath, Pathanamthitta District	23,42,103.00	Completed
19	Road construction in NCRMI campus using coir geotextile	16,47,725.00	Completed payment to be released
20	Project for two pilot projects for awareness creation and market development of coir geotextile – FOMIL	Rs.633000.00	completed
21	Road construction using coir geotextile in Vallikode panchayath, Konni	29,97,128.76	Ongoing
	Actual expenses for executing various projects (Item no 1 to 21)	14,93,424.77	-
	Grand Total	**Rs. 1,58,35,222.03**	

Section Officer

Annexure – II

ACTIVITIES UNDERTAKEN BY NCRMI (Surrendered Fund)

[I] COMPLETED

1. **Training Scheme on application of Coir Geotextile (2008-09)**

The training programme on implementation of coir geotextiel was conducted at Coirfed Auditorium from 18.08.2008 to 23.08.2008. The training was formally inaugurated by Dr. C. N. Manoj and 22 participants nominated by Coirfed, KSCC and Foam mattings participated in the training programme. The first session of the training on 18.8.2008 was engaged by Sri. K. Kumaraswamy Pillai on "An overview f coir geotextiles and its application". The second session of the day was engaged by Sri. T. Ravindran on "Mudwall construction using coir geotextiles". The third session of the day was engaged by Sri. K. X. Minil Kumar. He explained the potential applications of coir geotextiles and the position of coir geotextiles, technical back up needed for marketing of coir geotextiles. The last session of the day was engaged by Sri. A. G. Mohanan. He pointed out the use of coir goetextiles and the latex backed coir mattings for sea erosion control.

The first session on 19.08.2008 was engaged by Sri. Mohan Charankat. He shared the experience on Erosion control and slope stabilisation using coir geotextiles at Periyar river bank segment. The second session of the day was engaged by Dr. Girish on different treatments in coir fibre, their behaviour in soil and the model stiudies executed at College of Engineering, Trivandrum. The third session of the day was engaged by Sri. Najesh Babu on "Slope stabilisation of toad embankments using coir geotextile at Indian Institute of Management Kozhikode Campus. The fourth session of the day was engaged by the representative of Ms. Sunitha M. Prasad on "Identification of suitable plant varieties for soil bio engineering. The fifth session of the day was engaged by Adv. Baby M. Perumpillil on "Environment Audt and legal impact on soil bioengineering projects. On third day field work was started at Mulakkakada on the NH side.

During the fourth day (22.08.2008) field visit was organised to see the application of coir geotextiles. The sites visited were Farm road at Thravoor, Near Arookutty Bridge, M/s Sud-Chemie India Pvt. Ltd., Binanipuram, Near

Nedumbassery Airport. Upon completion of the training programme NCRMI issued certificates to 22participants who have complete the five days training programme. The expenditure incurred for the training was Rs. 64,629.

2. **Design & Production of seeded Coir Geotextile and its application at the premises (2008-09)**

Foam mattings India Pvt. Ltd. has conducted miniature demonstration project at Wayanadu for the production of seeded coir geotextile and its application.

3. **Application of Coir Geotextile on erosion control (2008-09)**

A project on the application of erosion control using coir geotextile was undertaken in NCRMI Campus premises. The slopes were protected using coir gotextile 740 gsm and anchored properly.

4. **Strengthening of chandranandan Road at Sabarimala using Coir Geotextile**

Coir geotextile along a 350m stretch of Chandranandan road on an experimental basis. During inspection it was noted that the stretch of the chandranandan road wherein the coir geotextile laid as per the procedure providing sufficient consolidating time is functioning satisfactorily. For proper drainage and consolidation of road as well as to avoid slipping nature during rainy season, it was decided to spread M sand and red earth at 70:0 throughout the stretch of road. The expenditure incurred for the project was Rs. 15,834 for 2008-09 and Rs. 2,87,057 for 2009-10.

5. **Project Development of Coir Geotextile based Bio fillers for waste treatment to KSCC (2008-09)- RIT**

The project was aimed for developing cost effective and reliable small scale wastewater treatment solutions. The objective of the project was to develop different configurations of biofilters using coir geotextiles embedded in conduits that could be used for undertaking sewage treatment operations. To expand the potential utilisation of coir to more wider applications in environmental engineering. To initiate the startup for a resource base for appropriate solutions in environmental technology for the state of Kerala. The locations identified for the field based demonstration exercise were Kalathil resorts, Vaikkom and another one at Naveen food products at Marathakara. The expenditure incurred for the project was Rs. 1,62,500.

6. **Project on use of geofabrics for recharge of ground water (2008-09)**

The objective of the project was to conserve the surface water run-off on uncovered ground during monsoon by arresting ground water movement and improve ground water retention levels ad availability in suitable configuration. It was also intended to study the effectiveness of different types of coir fabrics for the above purpose. The expenditure incurred for the project was Rs. 1,15,000.

7. **Seminar on Geotextile-Bund Construction- Kuttanad (2008-09)**

A one day seminar on bund stabilisation using coir geotextile was conducted on 28.12.2008 at S. N. Auditorium, Valanjavazhy, Ambalapuzha. The seminar was intended to create awareness among the end users on the application of coir geotextile on bund stabilisation, road construction. Officials from PWD, Agriculture department, Soil Conservation department and Forest department attended the seminar. Four papers were presented by experts in the field on a) Construction of bund using coir geotextile and its strengthening – Sri. Anil K. R. b) Coir geotextile – Farmers friend – Sri. M. Kumaraswami Pillai. c) Use of coir geotextile in fram road construction – Dr. K. S. Beena d) Projects implemented using coir geotextile in Muthukulam block panchayath – Sr. Vijayakumar. An expenditure of Rs. 75,910.50 was incurred for the project.

8. **Training Programme to PSU'S on Coir Geotextile by Coir Board (2008-09)**

Training programme was conducted for PSU's by Coir Board and 50% of the payment on training was made to Coir Board. An expenditure of Rs. 16,910/- was incurred for the training.

9. **Project "Development of coir based pre fabricated liner**

The project was undertaken by Dr. Sheela Evangeline, Assistant Professor, Department of Civil Engineering, College of Engineering, Trivandrum. The objective of the project is to develop a coir based prefabricated liner which is equivalent to Geosynthetics Clay Liner (GCL) using non-woven geotextile knotted coir geotextiles, Bentonite (clay) and cement and polyvinyl acetate or any polymeric material. Characterisation of coir based liner was also done. It was found from the study that

bioclogging reduces the hydraulic conductivity. An expenditure of Rs. 7,11,420 was incurred for the project.

10. Foam mattings (India) Ltd Coir Geotextile MDA (2008-09)

A project in association with Kerala State Land Development Corporation, Foam mattings India Ltd. had undertaken the work for construction of farm road at Thuravoor. FOMIL has supplied mesh mattings to Kerala State Land Development Corporation in connection with the project and MDA was given.

The existing farm road is of 1.3m side slopes of 1:1.5, the new bund runs through the Pulintharamuri paddy fields and changaram paddy fields in the east west direction. The length of the farm road constructed is 1405 m. Top and bottom width of the road is 6m and 10.4m respectively. Side slope is 1:1. The design part of application of coir geotextile was done by the Department of Civil Engineering, School of Engineering, Cochin University of Science & Technology. The expenditure incurred for the project was Rs. 3,78,366.

11. Project Study on Structural Design for construction of sea wall with indigenous Technology FOMIL(2008-09)

The project was to explore the possibility of adopting indigenous technology using coir geotextiles, coir bags, coco logs etc for construction of sea wall and back water in tsunami affected areas in Alappad Panchayath and Kazhukanthruthu in Kollam district. The work was not completed by M/s Fomil and they remitted back the money.

12. Demonstration project application of coir geotextile for erosion control by establishing protective vegetation & Rock patches

Slope varied from 25% to 70% were protected using coir geotextile – 740 gsm at the campus of NCRMI during 2009-10. The slopes were stabilised with establishment of vegetation. An expenditure of Rs. 2,85,600 was incurred for the project.

13. Project on laboratory studies to evaluate the feasibility of use of coconut fibre in bituminous road construction 2009-2010

The objective of the study was laboratory evaluation of coir fibre as reinforcing material in bituminous mixes for improvement of structural strength and

evaluation of coir fibre as stabilising additives in SMA for prevention of binder drainage. The study was implemented in two phases – laboratory work and field trials. The expenditure incurred for the training was Rs. 1,68,540.

14. Research Project- Studies on Development of Coir Rubber Composite Product- By NIIST

The objectives of the project was development of compositions and processes for manufacture of molded coir – rubber composite products suitable for applications such as floor tiles & roof tiles. The project was conducted by National Institute for Interdisciplinary Science & Technology. The roof tiles based on coir – rubber composites were tested for durability and weather resistance. The tiles showed a mean water absorption of 23.7g/m2. Work was also done for fire retardancy and mechanical properties and to standardise the products. An expenditure of Rs. 4,65,760 was incurred for the project.

15. Process Development for the softening of coconut husks-Pelican Bio-Tec and Chemical Lab

Dr. C. N. Manoj, the Principal Investigator has submitted the project for process development for the softening of coconut husk using biotech methods. The project envisaged the identification of different protocols, both through biotech and biochemical routes, which can soften the coconut husk in an eco-friendly manner to yield good quality fibre and coir pith. Softening was studied in two stages ie. one of delignification and other of de-pectination using appropriate micro-organisms and through chemical means. An amount of Rs. 2,54,200 was released for the project.

16. Road construction-Rajiv Gandhi Indoor Stadium,Konni

Roads are essential part of our life. Paved roads are built for the comfort and convenient of the public. The key characteristic of the paved roads and parking lots are their high initial cost, reliability, design life/ length of useful service and cost of maintenance

For this project 50m length x6.5m wide road constructed using 740GSM coir geotextiles. This road is constructed form Konni-poonkavu main road to Rajiv Gandhi Indoor Stadium open ground. Coir geo-textiles can be used to stabilize the soil temporarily when construction roads or banks. Coir geotextiles are being used as a separation cum drainage layer in the road. It is also intended to serve as a

ACTION PLAN FOR GTDP (2015 -16) AND ITS PRESENT STATUS

No.	Application	Present status
1	**Research & Development work** The scope of coir geotextile for various engineering application is to be explored. Coir geotextile can be extensively used for engineering application like slope stabilisation, road construction etc.	▪The road construction using coir geotextile in Vallikode panchayath, Konni is ongoing. ▪Providing additional 40 mm chipping carpet for kottarathilpadi Nalloorpadi road is ongoing. ▪Stabilisation of the embankment for the newly constructed road in NCRMI campus is ongoing.

Section Officer

reinforcement material in the beginning of the project. Geo-synthetics are widely used in the construction of road all over the world, whereas use of coir geotextiles is very limited in such construction. Only very limited trials on use of coir geotextiles in road construction has been executed in Kerala. Benefits of using coir geotextile in road construction are Low cost, long lasting separation of the base and sub grade material, Preservation of load-bearing capacity, ability to extend the life of paved roads. The expenditure incurred for the construction work was Rs. 1,97,910.

17. **Construction of Kottarathilpadi Nalloorpadi road using coir geotextile in Enadimangalam Panchayath, Pathanamthitta District**

Road construction using Coir Geotextile was done for Kottarathilpadi-Nallurpadi road (1610 m^2) in Enadimangalam Grama Panchayath at Pathanamthitta District. 740 gsm coir geotextile was used for the road construction. Two layers of coir geotextile was used to act a separator, reinforcement and drainage. The first layer of coir geotextile was used just above the subgrade. The second layer of coir geotextile was used below the bituminous layer. The use of coir geotextile has reduced the thickness of various layers of the pavement and the performance of the pavement is satisfactory. The expenditure incurred for the construction work was Rs. 24,48,502/-

18. **Construction of `Ambedkar Colony` road using coir geotextile in Valikode panchayath, Pathanamthitta District**

Road construction using Coir Geotextile was done for Ambedkar Colony road (2092 m^2), Valikode Panchayath at Pathanamthitta District. 900 gsm coir geotextile was used for the road construction. Two layers of coir geotextile was used to act a separator, reinforcement and drainage. The expenditure incurred for the construction work was Rs. 23,42,103.

[II] ONGOING

1. **Road Construction in NCRMI campus using coir geotextile**

The road construction work using coir geotextile is progressing in NCRMI campus. The work almost completed.

2. **Project for two pilot projects for awareness creation and market development of coir geotextile – FOMIL**

Foammattings (India) Ltd. in collaboration with NCRMI has undertaken the work of stabilisation of Karakonnam canal bank using coir geotextile in Kochi Corporation. Work completed. Deposit for M/s Foam Mattings awaited.

3. **Road construction using coir geotextile in Vallikode panchayath, Konni**

It is planned to construct a road using coir geotextile for Puthenvillapadi – Kollappara (522m) in Vallikode panchayath in Konni. Construction ongoing.

4. **Road performance evaluation**

The Research & Development division of NCRMI has undertaken road construction using coir geotextile in Pathanamthitta district. The construction work has been successfully completed during March 2014 and the road is open to traffic. The performance of the pavement has to be evaluated by testing. Benkleman beam is a device used for measuring deflection of flexible pavement under moving wheel loads. Benkleman beam utilises the technique of using balanced beam in conjunction with a suitable vehicle to measure road flexure. The unevenness of the road surface is an important measure of road conditionand a key factor in determining vehicle operating costs. Modified roughness indicating machine is a simple machine to measure roughness, also called MERLIN – Machine for evaluating roughness using low cost instrumentation.

The safety and comfort of the users id adversely affected by poor riding quality of the roads. The riding quality, also termed as unevenness or roughness is an important parameter for evaluation of surface condition of roads. Roughness is the distortion in the road profile, which is of main concern to the road users. Bump integrator also known as Roughometer or Automatic Road unevenness recorder gives quantitative integrated evaluation of surface irregularities on a digital couter/LCD screen. It comprises of a single wheeled trailer, with a pneumatic tyre mounted on a chasis, on which an integrating device is fitted. Pavement dynamic cone penetrometer is a simple and robust instrument for rapid in-situ measurement of structural properties of road pavement It can evaluate the strength of sub-grade

and bases for pavements. Tender has been floated for the procurement of road testing equipment.

[III] ACTIVITIES TO BE TAKEN UP UNDER THE SCHEME

1. Pond protection at College of Agriculture, Vellayani

a. The Department of Agronomy is maintaining an integrated farming unit (crop+ fish + duck system) which includes a pond of size 28 m x 13 m with a depth of 6 m. The sides and shores of the pond is affected by severe erosion fro which some measures like packing with soil filled gunny bags were done. Still the sloppy sides are highly vulnerable to erosion and instability. It is found that coir geotextiles is a better option for providing embankment protection to the sides and shores of the pond and reduce soil erosion and increase vegetation growth. The integrated fishing unit maintained by Department of Agronomy serves a model one to demonstration purpose for students as well as public. The use of coir geotextile in this unit for providing embankment protection will surely create awareness among the public. Hence it is intended to undertake this research work of pond protection during summer season after the water has receded.

b. As part of the All India Coordinated Research project on Integrated Farming system of the ICAR four different IFS models are being established in the Cropping Systems Research Centre, Karamana, Thiruvananthapuram. One of the model is homestead based. The area demarcated for this model has certain sloping areas (approx. 18m length and 2m width, 15m length and 7m width, 20m length and 4m width) which are prone to erosion. Another model is the rice based wetland model in which fisheries component is included. The fish pond is of 45m length, 5m width and 5m width and its sides are sloping and needs to be stabilised. This project can be demonstrated as a viable measure for containing erosion in homesteads and fish ponds of Kerala to farmers during training programmes.

Section officer

Annexure – III

ACTION PLAN FOR GEOTEXTILE DEVELOPMENT PROJECTS

(Surrendered Fund)

An action plan is formulated to utilise the surrendered fund under Geotextile Development Project. Rs. 1,07,34,232.75/- from Kerala Sate Coir Corporation and Rs. 42,00,015/- from Foam mattings India Pvt. Ltd. has been received as surrendered fund.

1. Training/Seminar

It is proposed to organise training and seminar on different applications of coir geotextile to stake holders of various agencies. Awareness creation among decision makers of various end user departments like PWD, Irrigation, Soil Conservation, Forests etc, Heads of LSGD's in the State by organising workshops. presentations etc. It is also planned to organise National and International Workshops/presentations on geotextiles to popularise the application of coir geotextiles. The amount earmarked for training/seminar is Rs. 1,75,000/-.

2. Research and Development Activities

Various applications of coir geotextile need to be developed and popularised. Database on coir geotextile to be strengthened for convincing the end users on efficacy of coir geotextile as an erosion control as well as environmental friendly material. Laboratory studies are needed for the multifaceted use of coir geotextiles and promote wide acceptance for coir geotextile. Systematically and technically supported field trials are required to be conducted. Wide spread field trials covering the climatic variations, soil conditions and location of the area, so as to get all possible climatic and soil conditions prevailing in the rest of the world and development of new products as per field requirement. Development of standards for use of coir geotextiles from the laboratory and field trials. The amount earmarked for research and development activities is Rs. 32,50,000/-.

3. Demonstration projects

It is proposed to demonstrate various applications of coir geotextile like erosion control, road construction using coir geotextile etc. It is also intended to exhibit the technology developed and create awareness regarding the use of coir geotextile in

various civil engineering works. The amount earmarked for demonstration project is Rs. 1,15,09,247/-.

Director

Annexure – IV(a)

ACTION PLAN FOR GTDP (2008-09)

1. **Erosion control application**

   The application of coir geotextile in erosion control is to be evaluated for its wide spread popularity. The destructive effect of rain increases with the steepness of the slope of the surface. The rate of detachment of soil particles and its transportation depends on the erodability of the soil and the kinetic energy of rain drops. Wind too causes such erosion. Geotextiles are used extensively in erosion control works. The ultimate objective of it is to establish a dense network of root system and vegetable cover. The high tensile strength of coir fibres protects steep surfaces from heavy flows and debris movement. Geotextiles are permeable textile fabrics used to prevent the soil from migrating, while maintaining the water flow.

2. **Bund Construction**

   It is also proposed to use coir geotextile for bund construction. Soil erosion is a common phenomenon, affecting roads and construction of bunds. "Soil erosion is high here because of floods and the loose nature of the soil. Coir geotextile can be effectively used for bund construction.

3. **Road construction using coir geotextile**

   In road pavements, unsatisfactory performance of roads is due to poor quality of subgrade, improper drainage, insufficient thickness and inferior quality of pavement. All these factors can be mitigated by placing the closely knitted geotextile on the weak subgrade between the subgrade and the sub base, thus preventing intermingling of the soils and the granular sub base and improves drainage, thereby the sub grade stiffens and become stronger on consolidation, due to self weight of pavement above, construction rolling and traffic loads thus increase the strength of the pavement. Hence it is proposed to conduct research work using coir geotextile as reinforcement in pavement.

4. **Research & Development activities**

   Laboratory studies are required for the multifaceted use of coir geotextile and to promote wide acceptance for coir geotextile.

Director
NCRMI

Annexure – IV(b)

ACTION PLAN FOR GTDP (2009-10)

1. **Erosion control application**

   Considering the importance and significance of the project, the works initiated during 2008-09 will be continued.

2. **Road construction using coir geotextile**

   Coir geotextile along a 350m stretch of Chandranandan road was done on an experimental basis. During inspection it was noted that the stretch of the chandranandan road wherein the coir geotextile laid as per the procedure providing sufficient consolidating time is functioning satisfactorily. The expenditure incurred for the project was Rs. 15,834 for 2008-09. The Chandranandan road is to be completed.

3. **Research & Development activities**

   Considering the importance of R&D projects. the research and laboratory studies initiated during 2008-09 will be continued.

4. **Awareness creation and market development**

   Awareness has to be created for the wide use of coir geotextile and its market development. It is intended to organaise seminars and training to coir workers, Public sector undertakings regarding the application of coir geotextile. Awareness creation among decision makers of various end user departments like PWD, Irrigation, Soil Conservation, Forests etc, Heads of LSGD's in the State by organising workshops, presentations etc. It is also planned to organise National and International Workshops/presentations on geotextiles to popularise the application of coir

Annexure – IV(c)

ACTION PLAN FOR GTDP (2010-11)

1. **Erosion control application**

   Considering the importance and significance of the project, the works initiated during 2009-10 will be continued.

2. **Research & Development activities**

   Considering the importance of R&D projects, the research and laboratory studies initiated during 2009-10 will be continued.

3. **Road construction using coir geotextile**

   New areas to be explored to demonstrate the application of coir geotextile in road construction. Laboratory and field studies have to be conducted to explore the use of coir geotexile in road construction.

4. **Ground Improvement**

   Coir geotextiles used for ground improvement will help to undergo ground

Annexure – IV(d)

ACTION PLAN FOR GTDP (2011-12)

1. **Erosion control application**

   Considering the importance and significance of the project, the works initiated during 2010-11 will be continued.

2. **Research & Development activities**

   Considering the importance of R&D projects, the research and laboratory studies initiated during 2010-11 will be continued.

3. **Product development**

   Product development plays an important role in the development of coir geotextile and will open wide possibility for coir geotextile. Agri coir cells are excellent for erosion control and vegetation establishment on steep slopes devoid of top soil. Once placed and secured on slope, the geocell can be filled with soil or a mineral fill. On steep barren slopes it is difficult to place top soil. Agri coir cell of higher GSM with tightly woven coir geo-textile bound in a honeycomb cell like structure.

   Agri Coir Cells were developed for slope land stabilization and cultivation. Cellular Confinement Systems are popularly known as "Agri coir cell" add the third dimension to the Agri coir cell, which open up more avenues of applications, ranging from providing strength to geosystems, for protection against erosion. Agri coir cell is fabricated using a coir geotextile hence it is permeable and allows water to flow between cells encouraging drainage and vegetation.

Annexure – IV(e)

ACTION PLAN FOR GTDP (2012-13)

1. **Road construction using coir geotextile**

   New areas to be explored to demonstrate the application of coir geotextile in road construction. Coir geotextile can be used to serve the function of separator, reinforcement, drainage and filtration. The use of coir geotextile as reinforcement is to be explored and more research has to be conducted in this area. Both laboratory and field study has to conducted to explore the possibility of road construction using coir geotextile.

2. **Product development**

   Considering the importance and significance of the project, the works initiated during 2010-11 for the development of agri-coir cell will be continued. The agri-coir cell has to be explored for its cultivation application along slopes.

Annexure – IV(f)

ACTION PLAN FOR GTDP (2013-14)

1. Performance evaluation of road

The performance of the pavement has to be evaluated by testing. NCRMI has constructed road using coir geotextile at Kottarathilpadi Nalloorpadi road (418 m^2), Enadimangalam Panchayath and Ambedkar Colony road (2175 m^2), Vallikode Panchayath in Pathanamthitta district. The construction work of the road was completed during February 2014 and is open to traffic. The performance of the road is to be extensively tested to establish the use of coir geotextile in road construction. The performance of the pavement has to be evaluated by testing. The unevenness of the road surface is an important measure of road conditionand a key factor in determining vehicle operating costs. The safety and comfort of the users id adversely affected by poor riding quality of the roads. The riding quality, also termed as unevenness or roughness is an important parameter for evaluation of surface condition of roads. Hence it is found necessary to test the performance of the road.

2. Pond protection using coir geotextile

It is found that coir geotextiles is a better option for providing embankment protection to the sides and shores of the pond and reduce soil erosion and increase vegetation growth. The application of coir geotextile in embankment stabilisation is to be explored.

Annexure – IV(g)

ACTION PLAN FOR GTDP (2014 -15)

1. Performance evaluation of Agri Coir Geocell

NCRMI proposed to develop an Agri coir geocell for slope land stabilization and cultivation. The technology will reduce the cost involved in develoing the slope for establishing tree crops. The field efficiency of the Agri coir geocell will be tested

Section officer

Annexure - V

Details of fund sanctioned from Govt. for the year 2005-06, 2006-07 for geotextile development projects

Sl. No.	Name of project	Amount utilised (Rs.)	Balance Amount (Rs.)	Remarks
1	Application of coir geotextile for a demonstration project at hi-tech coir park, Perumon, Kollam as per G. O. (Rt) No. 1446/06/ID dated 21.12.2006 for an amount of Rs. 15,00,000	Rs. 1,65,953	Rs. 13,34,047	Ongoing. Will be completed within two weeks.
2	Production of coir composite (coir twine) and its field demonstration as per G. O. (Rt) No. 1446/06/ID dated 21.12.2006 for an amount of Rs. 13,00,000	Rs. 12,33,792	Rs. 66,208	Project completed. Balance amount remitted back to Govt.
3	Application of coir geotextile for shore protection as per G. O. (Rt) No. 1446/06/ID dated 21.12.2006 for an amount of Rs. 9,75,000	NIL	Rs. 9,75,000	Since the project is not viable fund remitted back to Govt.
4	Tube technology for river bank stabilisation as per G. O. (Rt) No. 1446/06/ID dated 21.12.2006 for an amount of Rs. 12,25,000	NIL	Rs. 12,25,000	Since the project is not viable fund remitted back to Govt.
5	Field trial of bamboo coir composites in geotechnical engineering as per G. O. (Rt) No. 317/06/ID dated 21.03.2006 for an amount of Rs. 11,35,000	Rs. 10,42,136	Rs. 92,864	Project completed. Balance amount remitted back to Govt.
6	Geotechnical application of braided coir as per G. O. (Rt) No. 317/06/ID dated 21.03.2006 for an amount of Rs. 11,35,000	Rs. 6,57,383	Rs. 4,77,617	Project completed. Balance amount remitted back to Govt.

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Director
NCRMI

Annexure - VI

REPORT ON THE PROJECTS UNDERTAKEN UNDER GEOTEXTILE DEVELOPMENT PROGRAMME

1. **Production of coir composite (coir twine) and its field demonstration**

The field study was conducted in NCRMI site. The site was divided into three experimental plot of size 25 x 5 m with a slope of 40% and facing south-west direction. The coir geotextile used in the study are geotextile with core thread and geotextile without core thread. The experiment consisted of three treatments Treatment (T1) - Geotextiles with core thread, Treatment (T2) - Control plot, Treatment (T3) - Geotextiles without core thread. The runoff plots are being separated with a distance of 30 cm. The top and the two sloping sides of the runoff plots are protected from seepage and runoff by using corrugated GI sheet of 18G thickness. The precipitation falling directly over the runoff plot was collected at the sedimentation tank which is constructed at the bottom of the runoff plot. From the probable maximum precipitation of the experimental site the peek runoff is calculated. The coir geotextile was laid during the first week of June 2010, just before the onset of the monsoon. The installation procedure followed was generally similar to that used for surface erosion control.

2. **Field trial of bamboo coir composites in geotechnical engineering**

The main objective of the project was the use of bamboo coir composite for geotechnical applications. A field study was conducted at the site. Retaining wall using gabion facing (10m x 2m x 2m) and with thin panel facing (10m x 2m x 2m) was constructed using bamboo and coir geotextile as reinforcement. Locallay available lateritic soil used as the fill material. The work was completed in June 2011 and observations were taken for two rainy seasons. The performance of the retaining wall is satisfactory.

3. **Geotechnical application of braided coir**

The main objective of the project was to find practical application of braided rope in the new field and to promote high value erosion control product from coir. Braided coir is manufactured by the process of braiding in which coir yarns cross diagonally from side to side and at the same time pass over and under each other in such a manner that no adjacent yarn makes a complete turn about each other. The application of braided coir in slope stabilisation was evaluated.

4. **Application of coir geotextile for a demonstration project at hi-tech coir park**

The research work of construction of road using coir geotextile is under progress. The flexible pavement is constructed using 740 gsm coir geotextile in two layers. The work has been completed.

ACTION PLAN FOR GTDP (2008-09) AND ITS PRESENT STATUS

Sl. No.	Application	Present status
1	**Erosion control application** The application of coir geotextile in erosion control is to be evaluated for its wide spread popularity. The destructive effect of rain increases with the steepness of the slope of the surface. The rate of detachment of soil particles and its transportation depends on the erodability of the soil and the kinetic energy of rain drops. Wind too causes such erosion. Geotextiles are used extensively in erosion control works. The ultimate objective of it is to establish a dense network of root system and vegetable cover. The high tensile strength of coir fibres protects steep surfaces from heavy flows and debris movement. Geotextiles are permeable textile fabrics used to prevent the soil from migrating, while maintaining the water flow.	▪ A project on the application of erosion control using coir geotextile was done in NCRMI Campus premises. The slopes were protected using coir gotextile 740 gsm and anchored properly.
2	**Bund Construction** It is also proposed to use coir geotextile for bund construction. Soil erosion is a common phenomenon, affecting roads and construction of bunds. "Soil erosion is high here because of floods and the loose nature of the soil. Coir geotextile can be effectively used for bund construction.	▪ Coir geotextiles, coir bags, coco logs etc were used for construction of sea wall and back water in tsunami affected areas in Alappad Panchayath and Kazhukanthrurthu in Kollam district.
3	**Road construction using coir geotextile** In road pavements, unsatisfactory performance of roads is due to poor quality of subgrade, improper drainage, insufficient thickness and inferior quality of pavement. All these factors can be mitigated by placing the closely knitted geotextile on the weak subgrade between the subgrade and the sub base, thus preventing intermingling of the soils and the granular sub base and improves drainage, thereby the sub grade stiffens and become stronger on consolidation, due to self weight of pavement above, construction	▪ Chandranandan road (350m) was constructed using coir geotextile on an experimental basis. ▪ Construction of farm road using coir geotextile at Thuravoor was done in association with Kerala State Land Development Corporation, Foam mattings India Ltd.

3. **Geotechnical application of braided coir**

The main objective of the project was to find practical application of braided rope in the new field and to promote high value erosion control product from coir. Braided coir is manufactured by the process of braiding in which coir yarns cross diagonally from side to side and at the same time pass over and under each other in such a manner that no adjacent yarn makes a complete turn about each other. The application of braided coir in slope stabilisation was evaluated.

4. **Application of coir geotextile for a demonstration project at hi-tech coir park**

The research work of construction of road using coir geotextile is under progress. The flexible pavement is constructed using 740 gsm coir geotextile in two layers. The work has been completed.

ACTION PLAN FOR GTDP (2009-10) AND ITS PRESENT STATUS

Sl. No.	Application	Present status
1	**Erosion control application** Considering the importance and significance of the project, the works initiated during 2008-09 will be continued.	▪ As part of erosion control work slope was varied from 25% to 70% were protected using coir geotextile – 740 gsm at the campus of NCRMI. The slopes were stabilised with establishment of vegetation.
2	**Road construction using coir geotextile** Coir geotextile along a 350m stretch of Chandranandan road was done on an experimental basis. During inspection it was noted that the stretch of the chandranandan road wherein the coir geotextile laid as per the procedure providing sufficient consolidating time is functioning satisfactorily. The expenditure incurred for the project was Rs. 15,834 for 2008-09. The Chandranandan road is to be completed	▪ Field trials were conducted for the evaluation of coir fibre as reinforcing material in bituminous mixes
3	**Research & Development activities** Considering the importance of R&D projects, the research and laboratory studies initiated during 2008-09 will be continued.	▪ Characterisation of coir based liner was conducted. ▪ Laboratory study was conducted for the evaluation of coir fibre as reinforcing material in bituminous mixes for improvement of structural strength and evaluation of coir fibre as stabilising additives in SMA for prevention of binder drainage. ▪ Compositions and processes were developed for manufacture of molded coir – rubber composite products suitable for applications such as floor tiles & roof tiles. ▪ Process development for the softening of coconut husk using biotech methods was done by identifying different protocols, both through biotech and biochemical routes, which can soften the coconut husk in an eco-friendly manner to yield good quality fibre and coir pith.

4	**Awareness creation and market development** Awareness has to be created for the wide use of coir geotextile and its market development. It is intended to organaise seminars and training to coir workers, Public sector undertakings regarding the application of coir geotextile. Awareness creation among decision makers of various end user departments like PWD, Irrigation, Soil Conservation, Forests etc, Heads of LSGD's in the State by organising workshops, presentations etc. It is also planned to organise National and International Workshops/presentations on geotextiles to popularise the application of coir geotextiles.	▪A one day seminar on bund stabilisation using coir geotextile was conducted at S. N. Auditorium, Valanjavazhy, Ambalapuzha. The seminar was intended to create awareness among the end users on the application of coir geotextile on bund stabilisation, road construction. ▪The training programme on implementation of coir geotextiel was conducted at Coirfed Auditorium. ▪Training programme was conducted for PSU's by Coir Board

ACTION PLAN FOR GTDP (2010-11) AND ITS PRESENT STATUS

Sl. No.	Application	Present status
1	**Erosion control application** Considering the importance and significance of the project, the works initiated during 2009-10 will be continued.	▪ The slope stabilisation work was done using coir geotextile (740 gsm).
2	**Research & Development activities** Considering the importance of R&D projects, the research and laboratory studies initiated during 2009-10 will be continued.	▪ The study on feasibility on the use of coconut fibre in bituminous road construction completed. ▪ The studies on development of coir rubber composite completed. ▪ The studies on softening of coconut husk completed using appropriate micro-organism and chemical means.
3	**Road construction using coir geotextile** New areas to be explored to demonstrate the application of coir geotextile in road construction. Laboratory and field studies have to be conducted to explore the use of coir geotexile in road construction.	▪ Strengthening of Chandranandan road at Sabarimala completed. ▪ Road construction using coir geotextile completed at Rajiv Gandhi Indoor Stadium, Konni.
4	**Ground Improvement** Coir geotextiles used for ground improvement will help to undergo ground deformation without rupture and slip.	▪ Evaluation of coir geotextile as a reinforcing material to strengthen the subgrade was done.

ACTION PLAN FOR GTDP (2011-12) AND ITS PRESENT STATUS

Sl. No.	Application	Present status
1	**Erosion control application** Considering the importance and significance of the project, the works initiated during 2010-11 will be continued.	▪ The slope stabilisation work completed using coir geotextile.
2	**Research & Development activities** Considering the importance of R&D projects, the research and laboratory studies initiated during 2010-11 will be continued.	▪ The studies on development of coir rubber composite completed with the development of roof tiles based on coir-rubber composites which were tested for durability and weather resistance. ▪ The studies on softening of coconut husk completed. ▪ As part of research, Road construction using coir geotextile completed at Rajiv Gandhi Indoor Stadium, Konni.
3	**Product development** Product development plays an important role in the development of coir geotextile and will open wide possibility for coir geotextile. Agri coir cells are excellent for erosion control and vegetation establishment on steep slopes devoid of top soil. Once placed and secured on slope, the geocell can be filled with soil or a mineral fill. On steep barren slopes it is difficult to place top soil. Agri coir cell of higher GSM with tightly woven coir geo-textile bound in a honeycomb cell like structure. Agri Coir Cells were developed for slope land stabilization and cultivation. Cellular Confinement Systems are popularly known as "Agri coir cell" add the third dimension to the Agri coir cell, which open up more avenues of applications, ranging from providing strength to geosystems, for protection against erosion. Agri coir cell is fabricated using a coir geotextile hence it is permeable and allows water to flow between cells encouraging drainage and vegetation.	▪ The new product Agri coir cells were developed for slope stabilisation and cultivation.

ACTION PLAN FOR GTDP (2012-13) AND ITS PRESENT STATUS

Sl. No.	Application	Present status
1	**Road construction using coir geotextile** New areas to be explored to demonstrate the application of coir geotextile in road construction. Coir geotextile can be used to serve the function of separator, reinforcement, drainage and filtration. The use of coir geotextile as reinforcement is to be explored and more research has to be conducted in this area. Both laboratory and field study has to conducted to explore the possibility of road construction using coir geotextile.	•Road construction using coir geotextile completed for Korrarathilpadi Nalloorpadi road in Enadimangalam Panchayath and Ambedkar Colony road in Vallikode panchayath. Two layers of coir geotextile were used.
2	**Product development** Considering the importance and significance of the project, the works initiated during 2010-11 for the development of agri-coir cell will be continued. The agri-coir cell has to be explored for its cultivation application along slopes.	• Agri coir cell was developed and field study conducted to evaluate the efficacy of the developed product for erosion control.

ACTION PLAN FOR GTDP (2013-14) AND ITS PRESENT STATUS

Sl. No.	Application	Present status
1	**Performance evaluation of road** The performance of the pavement has to be evaluated by testing. NCRMI has constructed road using coir geotextile at Kottarathilpadi Nalloorpadi road (418 m^2), Enadimangalam Panchayath and Ambedkar Colony road (2175 m^2), Vallikode Panchayath in Pathanamthitta district. The construction work of the road was completed during February 2014 and is open to traffic. The performance of the road is to be extensively tested to establish the use of coir geotextile in road construction. The performance of the pavement has to be evaluated by testing. The unevenness of the road surface is an important measure of road conditionand a key factor in determining vehicle operating costs. The safety and comfort of the users id adversely affected by poor riding quality of the roads. The riding quality, also termed as unevenness or roughness is an important parameter for evaluation of surface condition of roads. Hence it is found necessary to test the performance of the road.	Could not take up due to paucity of fund.
2	**Pond protection using coir geotextile** It is found that coir geotextiles is a better option for providing embankment protection to the sides and shores of the pond and reduce soil erosion and increase vegetation growth. The application of coir geotextile in embankment stabilisation is to be explored.	Could not take up due to paucity of fund.

ACTION PLAN FOR GTDP (2014 -15) AND ITS PRESENT STATUS

Sl. No.	Application	Present status
1	**Performance evaluation of Agri Coir Geocell** NCRMI proposed to develop an Agri coir geocell for slope land stabilization and cultivation. The technology will reduce the cost involved in developing the slope for establishing tree crops. The field efficiency of the Agri coir geocell will be tested in the NCRMI campus.	▪ The performance of the agri coir cell developed was monitored and found to be successful.
2	**Awareness creation and Market development** Pilot projects are to be conducted to promote coir geotextile as a standard engineering material in engineering application like river bank protection and watershed management	▪ Conducted pilot project for awareness creation and market development of coir geotextiles