

NATIONAL INSTITUTE OF WIND ENERGY, CHENNAI

Memorandum of Understanding – 2018-19

PART – I OBJECTIVES

NIWE is an autonomous R & D institution under the Ministry established to serve as the technical focal point for wind power development in India, for promoting and accelerating the pace of utilization of wind energy and support the growing wind power sector in the country. Other objectives of NIWE are:

- to carry out activities such as wind/ solar resource assessment, preparing wind energy density maps, wind/ solar atlas, Indian standards & its certification on wind turbines, activities related to offshore wind energy etc., in the area of wind/ renewable energy, as may be assigned by the Ministry from time to time;
- to develop and strengthen the facilities and capabilities, evolve strategies, promote, conduct, co-ordinate and support research and development programs to achieve and maintain reliable and cost effective technology in wind power systems;
- to undertake human resource development programs for the personnel working in the wind energy sector;
- to promote commercial exploitation of know-how, know-why results and offer various consultancy services to the customers;
- to promote the development and commercialization of other wind energy systems.

PART –II EXERCISE OF ENHANCED AUTONOMY AND DELEGATION OF FINANCIAL POWERS

As per Rule 51 of NIWEs Memorandum of Association (MOA), NIWE Recruitment Rules and Bye-Laws, the Director General has been delegated with full powers to incur expenditure on all NIWE activities up to the Budget Limit.

PART – III RESEARCH AND DEVELOPMENT

Whereas the Institute recognizes that the process of developments has to relate continuously to significant and notable changes that are taking place in the Wind related industry and, rapidly exploring universe of knowledge in the area. And for that purpose, the Institute has:



1. to survive on specialization, work increasingly in frontline areas that transcend disciplines. The following thrust areas form part of the effort.
 - Research and Development (R & D)
 - Wind Resource Assessment and Offshore development (WRA&O)
 - Wind Turbine Testing (Both Large and Small)
 - Standards and Certification (S&C)
 - Information, Training and Customized Services (ITCS)
 - Wind Energy & Hybrid System
2. to have a perception and a value system appropriate to the pursuit of high engineering science to meet the critically evaluated needs of the Industry
3. to programme into their activities emerging technological needs with futuristic needs
4. to maintain and foster interactive linkage with leading technological institutions and Institutes of research in India and abroad.

PART- IV: ROLES OF MNRE AND NIWE:

Ministry of New and Renewable Energy [MNRE] on its part shall endeavour to provide adequate funding as per the approval of the Governing Council of NIWE for all the approved activities, besides providing direction and guidance on the thrust areas for research in accordance with overall aim of the government.

In consideration of activities to be implemented, the Institute shall endeavour:

- To absorb the establishment related expenditure from its internal earnings that is over and above the sanctioned grant by the Ministry under this head;
- To increase the internal generation of revenue by at least 10 to 20% every year. The institute shall project expenditure pattern for its Internal Revenue Generation and anticipated earnings during the year.
- To levy User charges including overhead/institutional charges/management fee in respect of Consultancy/Sponsored Project, wherever the output or benefit of services are utilized by others are levied at appropriate rates as per amended GFR Rule No.47 and display the same in the website.
- To achieve self-sufficiency in the matter of meeting expenditure on account of Salary and Salary related expenditure for regular staff of NIWE.
- To seek approval of the Ministry for activities beyond DG's delegated powers including those relating to agreements with international parties.
- Ministry shall hold a quarterly review meeting with NIWE at MNRE to review Physical and Financial targets and NIWE will send achievements of the targets on monthly basis to the Ministry and will also be reviewed by GC, NIWE appropriately.
- The institute shall follow the policy level decision(s) of GC/ MNRE with regard to programme implementation from time to time



PART- V: SPECIFIC PARAMETERS AND TARGETS

The following are specific activities along with defined timelines which NIWE is expected to complete during 2018-19.

TARGETS FOR THE YEAR 2018-19

Sl. No.	Unit	Target		Timeline
		Target	Deliverables	
I.	Wind Resource Assessment & Offshore	I. Offshore WRA a. Installation of LiDAR for offshore wind resources together with met ocean measurements off Tamil Nadu coast and Gujarat coast	Geo-physical study for placing LiDAR to be at two new locations off Gujarat coast.	31.01.2019
			Geo-physical study for placing LiDAR to be at two new locations off Tamilnadu coast.	30.03.2019
			EOI for 1000MW Commercial Offshore Wind Farm in coast Gujarat	31.05.2018
		b. Geo-Technical and Geo-Physical Survey off Gujarat and Tamil Nadu Coast	Sea surface mapping and soil characteristics for turbine micro siting and foundation design for 240 sq. km in Gulf of Mannar Tamil Nadu and 135 sq. km area near to the existing LiDAR installed at Gulf of Khambhat	For TN: 30.03.2019 For GJ 31.01.2019
		c. Establishment of National Research and Test Centre for Offshore Wind Turbines at Dhanushkodi	Conceptual design document	31.12.2018
		d. Installation of LiDAR for offshore wind resource measurement using LiDAR installed at Gulf of Mannar at Tuticorin, Tamil Nadu	Installation of LiDAR and start of measurements	30.03.2019
		e. Data collection and analysis for offshore wind resource measurement using LiDAR installed at Gulf of Khambhat, Gujarat including near shore wind profile measurement in Gujarat	Report preparation	20.12.2018



	f. Near shore wind profile measurement in Tamil Nadu	Installation of mast and start of measurement	31.10.2018
	II. Onshore WRA a. Integrated Wind Solar Resource Assessment	150m Wind Atlas Map Data sets suitable for Wind Solar Hybrid System 120 m Wind Atlas Map	a) 120 m wind atlas to be published after validation before 31.08.2018. b) 25 nos. of 100 m WMS will be installed during 31.3.2019
	b. Wind Resource Assessment in North East States using existing telecom towers of BSNL/Airtel (ongoing project for five years)	Installation of meteorological sensors on 50 Nos. of telecom towers (either by Airtel / BSNL)	31.03.2019
	c. Wind Resource Assessment in North East States using meteorological mast including projects sanctioned during 2010-11(NE) and 2015-16 (NE) (ongoing project)	Installation of 24 no. out of 50 masts. Measurements to be completed and submit the report for the project sanctioned during 2010-11 and 2015-16	31.03.2019
	d. Wind Resource Assessment in uncovered / new areas (2016-17) (ongoing project)	Installation of 5 masts in -- Kerala (2 nos.), Telangana (1 no.), West Bengal (2 no.)	30.09.2018
	e. Validation of wind power forecasting (30 nos. of 100m mast) (ongoing project)	4 nos. of mast to be installed in Tamil Nadu	31.05.2018
	f. Geotagging / online registry of wind turbines (ongoing project)	Web portal updated with data of wind turbines installed in the country	30.09.2018
	g. WRA using remote sensing instruments	Data validation report	31.03.2019



2.	Testing & Forecasting	a. Bench marking of costs for assessment of Capital Costs and O&M Costs for Wind Energy Technology for estimating Tariff as per the requirements of CERC/SERC	Assessments of cost for Wind energy technology	31.08.2018
		b. LVRT Testing facility	Procuring LVRT testing facility and Initiating testing of LVRT	31.01.2019
		c. RE Forecasting	Tamilnadu – To improve the forecasting error MAPE to less than 10%	31.07.2018*
			Gujarat – To Initiate forecasting facility on pilot basis Karnataka – To initiate forecasting facility on pilot basis Andhra Pradesh – To initiate forecasting facility on pilot basis	30.04.2018* 01.11.2018* 01.02.2019*
d. Testing Facility for active power control, reactive control, frequency response and other grid requirements in Wind Turbines	One Grid Emulation facility for Wind Turbine	31.01.2019 *		
3.	Standards & Certification	a. Preparation of Indian Wind Turbine Certification Scheme (IWTCS)	Indian Wind Turbine Certification Scheme	First draft would be ready by end of June and after stakeholder consultation by the Ministry, the certification scheme can be rolled out by 30.09.2018
		b. WTG Certification Projects	Two Projects will be taken up	31.12.2018



4.	Wind Turbine Research Station (WTRS), Kayathar	a. Establishment of Renewable Energy Demo Lab at Wind Turbine Test station at Kayathar Tamilnadu.	Completion of Building infrastructure works and readying for setting up Renewable Energy Demo Lab & SWT test facility	30.11.2018
		b. Installation and commissioning of 25 kW grid connected small wind solar hybrid system at WTRS Kayathar under demonstration mode	Installation and commissioning of 25 kW grid connected hybrid system	31.12.2018
5.	R&D	a. Come out with a design which improves the conversion efficiency of WTG by at least 5% above the present models in use	Improvement in the conversion efficiency of WTG by at least 5% above the present models in use	31.03.2019
		b. Establishment of Smart RE-Micro Grid with Integrated Resource and Building Management System (IRBM) at National Institute of Wind Energy, Chennai	Establishment of the Smart Micro Grid and commencement of Measurements related to Energy Management, Performance	Phase -1 would be targeted by 31.03.2019
		c. Small Wind Turbine hub Facility for Design and Component Testing at the Renewable Demonstration Lab in Wind Turbine Research Station(WTRS), Kayathar	Operational SWT hub test facility consisting of Maker's Space, Blade & Drive Train Test facility within the RE Demo Lab at WTRS	31.12.2018*
		d. Review of new RFP proposal received from various academic institution and industry	20 Nos. of R&D will be reviewed, evaluated.	31.03.2019*
		e. Evaluation / Monitoring against Milestones for RC Approved external projects	Completion of 4 Nos. of R&D projects	31.03.2019
		f. Paper & Publications by the Scientists at reputed journals/ conference	Ongoing exercise. Would publish at least 2 research papers.	31.03.2019




6.	IT	a. Creation of Data Centre for entire NIWE (inclusive of daily operative files and Data)	Data Centre Creation	31.10.2018
		b. Creation of Disaster Recovery (DR) site at WTRS, Kayathar	DR site creation	31.12.2018
7.	ITCS	a. International Training programs sponsored by MEA on Wind Turbine Technology and Applications for ITEC/SCAPP Countries	Four International /Special Training Program	31.03.2019
		b. National Training Programs on Wind Turbine Technology and Applications	Two National training programs	31.03.2019
		c. One Small Wind Turbine International Conference	Successful completion of the Conference	31.12.2018
	WRA&O	a. SNA Training Program / Workshop	One number	31.12.2018
8.	Other activities	Reports	Preparedness of NIWE to provide WRA service at International Level	30.06.2018
			Strategy/ report on starting/ promoting SWT sector and enhancing manufacturing facility (Indigenization of MW scale WTGs)	31.08.2018

*Subject to availability of manpower and budget.

PART-VI: ESTIMATED EXPENDITURE AND BUDGET

To support above activities and also for normal functioning of the institute, the total estimated expenditure to be incurred will be Rs. 78 crores (approx.) as detailed in Annexure-I, which is duly approved in the 26th meeting of the finance committee of NIWE, Chennai. Summary of budget is as per annex II.


Director General
 NIWE, Chennai


Secretary
 MNRE, New Delhi

Place: New Delhi

Date: 25.7.2018



ANNEXURE-I

ESTIMATES OF EXPENDITURE TO BE INCURRED DURING 2018-19

Sl. No.	Details of expenditure to be incurred during 2018-19	CFA Grants Committed Expenditure carried forward from 2017-18 (Fig. are provisional and unaudited)		CFA Grants Expenditure to be carried out during 2018-19		BE 2018-19 (Rs. in Crores)	Description of Inputs	Targeted outputs in measureable terms
		Capital expenditure (Rs. in Crores)	Revenue expenditure (Rs. in Crores)	Capital expenditure (Rs. in Crores)	Revenue expenditure (Rs. in Crores)			
1	Capital expenditure (infrastructure)	--	--	2.00	--	2.00	Computers, Civil repairs Structure, Software, Journals and capacity building. [2 crores]	Infrastructure additions at NIWE and WTRS Kayathar.
2	Wind Resource Assessment & Offshore	--	3.55	--	4.50	8.05	Offshore WRA Geo-Technical and Geo-Physical Survey off Gujarat and Tamil Nadu Coast [Approved in 40th GC- Rs. 7.0 crore (Spent 2.75 crores) and Rs. 4.5 crores approved in 41st GC] [8.75 crore]	Sea surface mapping and soil characteristics for turbine micro siting and foundation design.
		2.65	2.35	--	--	5.00	Installation of LiDAR for offshore wind resource measurement using LiDAR installed at Gulf of Mannar at Tuticorin, Tamil Nadu [Approved in 40th GC] [6.47 crores]	Installation of LiDAR and start of measurements



		--	--	--	0.90	0.90	Salary for 13 posts of Offshore on contract mode as per the approval of 40th GC.	
		--	0.50	--	--	0.50	WRA UC/NA 2010 to 2015-16, Estimation & validation WPD, WPM at Manalmelkudi & Geo tagging/online registry of WT. Maintenance of Wind Mast.	Measurements dismantling and transportation of mast, web portal updation with data of WT installed in the country.
		0.075	0.30	0.15	0.30	0.825	Wind Resource Assessment in uncovered / new areas (2016-17 [0.75 crore] Approved in 35th GC	Installation of 5 masts in – Kerala (2 nos.), Telangana (1 no.), West Bengal (2 nos.)
		--	0.90	--	--	0.90	Validation of wind power forecasting (30 nos. of 100 m mast)[0.9 crore] [Approved in 37th GC]	4 nos. of mast to be installed in Tamil Nadu
		--	1.00	--	--	1.00	WRA using remote sensing instruments [1.0 crore] [Approved in 40th GC]	Data validation report
3	Testing & Forecasting	--	--	--	0.35	0.35	Bench marking of costs for assessment of Capital Costs and O&M Costs for Wind Energy Technology for estimating Tariff as per the requirements of CERC/SERC [0.35 crores] (Approved in 41st GC)	Assessments of cost for Wind energy technology



		--	--	13.00	--	13.00	Testing Facility for active power control, reactive control, frequency response and other grid requirements in Wind Turbines [13 crores] (Approved in 41st GC)	One Grid Emulation facility for Wind Turbine for testing Grid compliance of wind turbines as per CEA connectivity regulations.
		10.00	--	--	--	10.00	Establishment of Low Voltage Right Through (LVRT) Testing facilities [10 crores] (Approved in 40th GC)	Mandatory requirement as per CERC guidelines for carrying out LVRT testing on wind turbines. Such facility will be first of its kind.
		0.88	1.03	--	--	1.91	Centre for Excellence. Approved in 40th GC for 2.90 crores.	
		--	--	--	0.50	0.50	Testing facility accreditation as per the new IECRE regulations and Performance Testing.	For accreditation as per the new IECRE regulations.
4	Standards & Certification	--	0.50	--	--	0.50	Standards, Certification Software/Hardware, and Capacity building including preparation of Indian Wind Turbine Certification Scheme. [0.50 crores]	Updating of existing standards Enhancement of technical capability. Indian Wind Turbine Certification Scheme. For accreditation for Certification.
5	Wind Turbine Research Station (WTRS), Kayathar	--	--	--	0.50	0.50	Operation & Maintenance of Wind Electric Generators for the uninterrupted operation of the machines for the windy season 2018. [0.50 crores]	Nine numbers of 200 kW MICON, one number of 600 kW SUZLON, one number of 2000 kW KENERSYS and one number of 2000 kW INOX



		2.80	--	3.55	--	6.35	<p>Establishment of Renewable Energy Demo Lab for Blade Test, & Drive Train hub) at Wind Turbine Test station at Kayathar Tamilnadu.</p> <p>Rs.6.35 crores include Rs.5.85 crores for the facility towards Demo Lab. [6.35 crores]</p>	<p>FC NIWE in its 24th meeting held on 4/5/17 approved the RE lab cum training lab at a cost of Rs.2.8 crores and the minutes of the same was approved by GC NIWE in its 40th meeting held on 25/9/17.</p> <p>NIWE after taking into account the need for</p> <ul style="list-style-type: none"> * makers's space for design and fabrication of small wind turbine by innovators and start ups- ; *small wind turbine blade testing facility components etc; *Small wind turbine dry train for blade generator *innovative space for interns to create and experiment with renewable energy system. *control centre for 25 kw hybrid connected wind solar hybrid system *data centre for WTRS wind farm * conference hall for training /seminars
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								CPWD was requested to send a revised estimate incorporating the above requirements. Now CPWD vide their letter dated 9/3/18 [copy enclosed] has indicated an amount of Rs.5.85 crores for the same. Since this is an essential requirement and the above-referred projects have been approved by RC in its 26th meeting held on 7/3/18, the facility is required to house these projects.
		0.25	--	0.55	--	0.80	Installation and commissioning of 25 kW grid connected small wind solar hybrid system at WTRS Kayathar under demonstration mode [0.8 crores- Rs. 0.375 crore sanctioned by MNRE and 0.425 crore under CFA funding] [0.425 crores]	Installation and commissioning of 25 kW grid connected hybrid system (Extension of sanction order from MNRE pending)



6	Research & Development / Information Training [ITCS], Dissemination, awareness creation and IT related services	--	--	5.32	--	5.32	Establishment of Smart RE-Micro Grid with Integrated Resource and Building Management System (IRBM) at National Institute of Wind Energy, Chennai [5.32 crores] (Approved in 41st GC)	To make NIWE campus as green campus with self-sufficiency in energy and moving forward with grid-independent campus. Establishment of the Smart Micro Grid and commencement of Measurements related to Energy Management, Performance
		--	--	7.30	0.22	7.52	Small Wind Turbine hub Facility for Design and Component Testing at the Renewable Demonstration Lab in Wind Turbine Research Station (WTRS), Kayathar [7.52 crores] (Approved in 41st GC)	Operational SWT hub test facility consisting of Maker's Space, Blade & Drive Train Test facility within the RE Demo Lab at WTRS
		--	--	--	--	--	Review of new RFP proposal received from various academic institution and industry	20 Nos. of R&D will be reviewed, evaluated.
		--	--	--	0.20	0.20	Evaluation / Monitoring against Milestones for RC Approved external projects [0.20 crores]	Completion of 4 Nos. of R&D projects
		--	--	2.00	--	2.00	Creation of Data Centre for entire NIWE (inclusive of daily operative files and Data) [2 crores]	Data Centre Creation



		--	--	2.00	--	2.00	Creation of Disaster Recovery (DR) site at WTRS, Kayathar [2 crores]	DR site creation
		--	--	--	0.25	0.25	National Training Programs on Wind Turbine Technology and Applications [0.25 crores]	Two National training programs
		--	--	--	0.65	0.65	One Small Wind Turbine International Conference [0.65 crores] (Approved in 41st GC)	Successful completion of the Conference
		--	--	--	0.35	0.35	SNA Training Programme / Workshop [0.35 crores]	One number
7	Expenditure	--	--	--	6.50	6.50	Maintenance, up-keep expenses of the Centre [Chennai/Kayathar]	Essential need based expenditure.
	TOTAL (A)	16.66	10.13	35.87	15.22	77.88*		

* Exclusive of GST



Annexure II

DETAILS OF BUDGET REQUIREMENT FOR THE YEAR 2018-19 (TO BE INCURRED FROM INTERNAL REVENUE GENERATION)				
[Figures in lakhs]				
Sl. No.	Details of expenditure to be incurred during 2018-19	BE 2018-19	Description of Inputs	Targeted outputs in measureable terms
1	Consultancy Project Expenses	550.00	Expenditure of TA/DA, Calibration charges, Maintenance of Materials, Meeting Expenditure, Hospitality etc	Completion & Submission of Reports to the Industries on time.
2	Establishment Expenses	600.00	Expenditure of Salaries & Allowances	
3	Capital Expenditure	1,200.00	Procurement of One Wind Turbine for R&D related activities at Kayathar, TamilNadu	To carry out R&D related Activities in NIWE / WTRS, Kayathar
	TOTAL EXPENDITURE	2,350.00		
4	PROJECTED INCOME	1450.00	Income earned from Wind Resource Assessment, Wind Turbine Testing, Standards & Certification, Solar Radiation Resource Assessment Consultancy Services	

