Environment Monitoring Report

Bi-annual Environment Monitoring Report
August 2016

PAK: MFF – Power Transmission Enhancement Investment Program (Tranche 3)

Prepared by Faisalabad Electric Supply Company, Punjab for the Asian Development Bank.

NOTES

(i) The fiscal year (FY) of the Government of the Islamic Republic of Pakistan and its agencies ends on 30 June.
(ii) In this report "$" refer to US dollars.

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L2972 PDEIP: FESCO BAEMR (Jan-Jun 2016) approved for disclosure
Safia Shafiq
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02/09/2016 11:12 AM
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1 Attachment

L2972 FESCO BAEMR (Jan-Jun 2016).docx

Dear Liaqat Sb.,

The attached BAEMR (Jan-Jun 2016) of FESCO under L2972 PDEIP is approved for disclosure. Please have it uploaded on ADB website and share the weblink with me.

Thanks and regards,

Safia Shafiq
Environment Specialist (Consultant)
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Bi-annual Environmental Monitoring Report

Project Number: 38456
{January -2016 to June -2016}

Islamic Republic of Pakistan: Power Distribution Enhancement Investment Program (Multitranche Financing Facility)

ADB Loan. 2972-PAK: Tranche-III, Investment Project

Prepared by: Environment & Social Safeguard Cell PMU

Office of Chief Engineer (Development) PMU FESCO, Faisalabad

For: **Faisalabad Electric Supply Company FESCO**

ABBREVIATIONS

ADB	Asian Development Bank
DISCO	Distribution Company
EPA	Environmental Protection Agency
EIA	Environment Impact Assessment
EMMP	Environmental Management & Monitoring Plan
FESCO	Faisalabad Electric Supply Company
GOP	Government of Pakistan
GSC	Grid Station Construction (Department)
GSO	Grid Station Operation (Department)
GWh	Gega Watt Hour
IEE	Initial Environmental Examination
Km	Kilometer
KV	Kilo Volts
KWh	Kilo watt hour
LAA	Land Acquisition Act (of 1984)
LARP	Land Acquisition and Resettlement Plan
LARF	Land Acquisition and Resettlement Framework
Leq	Equivalent sound pressure level
MVA	Mega Volt Ampere
MW	Mega Watts
NTDC	National Transmission & Distribution Company
NIBGE	National Institute of Biotechnology & Genetic Engineering
NEQS	National Environmental Quality Standards
PB	Chemical Symbol for Element Lead
PEPCO	Pakistan Electric Power Company
PCB	Poly Chlorinated Biphenyl
PEPA	Punjab Environmental Protection Agency
PEPAct	**Pakistan Environment Protection Act 1997 (as regulated and amended)**
PMU	Project Management FESCO
ROW	Right of Way
STG	Secondary Transmission & Grid
TDS	Total Dissolved Solid

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PART 1:- INTRODUCTION

1.0 INTRODUCTION AND BACKGROUND OF THE PROJECT

A. BASIC DATA

i.	ADB Loan No.	2972-PAK
ii.	Project Title	Power Distribution Enhancement Investment Project Tranche III
iii.	Borrower	Islamic Republic of Pakistan
iv.	Executing Agency	Pakistan Electric Power Company (PEPCO)
v.	Implementing Agency	Faisalabad Electric Supply Company Ltd. (FESCO)
vi.	Total Allocated Amount	US $ 24.11 Million
vii.	Loan Approval Date	-
viii.	Loan Signing Date	September 09, 2013
ix.	Date of Effectiveness	December 10, 2013
	Date of Closing	
	i) Original	June 2016
	ii) Revised	31-01-2018
x.	Date of Physical Completion	-
	i) Original	
	ii) Revised	
xi.	Date of Last ADB Review Mission	27-05-2016

2.0 DESCRIPTION OF THE PROJECT

2.1 FESCO Existing System

1. Faisalabad Electric Supply Company Ltd. (FESCO) is a Public Limited Utility Company, established in 1998 under Companies Ordinance 1984 as result of WAPDA restructuring and is responsible for distribution of Electric Power within its territorial jurisdiction and presently serving approximately 3.50 Million Customers (Domestic, Commercial, Agricultural, Industrial and others) in the Eight (08) districts of Province Punjab (Faisalabad, Toba Tek Singh, Jhang , Chiniot , Bhakkar, Sargodha , Khushab & Mianwali). The key Technical Data of FESCO's System is as under:

Table 1.1:- FESCO's Technical Data

1.	Area Jurisdiction	Sq. Km	44,247
2.	132 KV Grid Station	No	62
3.	66 KV Grid Station	No	23
4.	Private Grid Stations	No	18
5.	Peak load demand (July 05,2015)	MW	3,008
6.	Units Purchased Upto September 2015	MLN Units	3,648
7.	Units Sold Upto September 2015	MLN Units	3,213
8.	Technical & Distribution losses	Percentage	11.9
9.	Transmission Lines 132 KV	Km	1,865
10.	Transmission Lines 66KV	Km	1,260
11.	HT Line	Km	38,760
12.	LT Line	Km	25,948
13.	HT line Feeders	Nos	917
14.	Domestic consumption Upto Sep: 2015	Million Unit	1,707
15.	Domestic consumers	No.	3,037,888
16.	Commercial consumption Upto Sep: 2015	Million Unit	168
17.	Commercial consumers	No.	346,859
18.	Industrial consumption Upto Sep: 2015	Million Unit	988
19.	Industrial Consumers	No.	46,867
20.	Agricultural consumption Upto Sep: 2015	Million Unit	238
21.	Agricultural consumers	No.	39,862

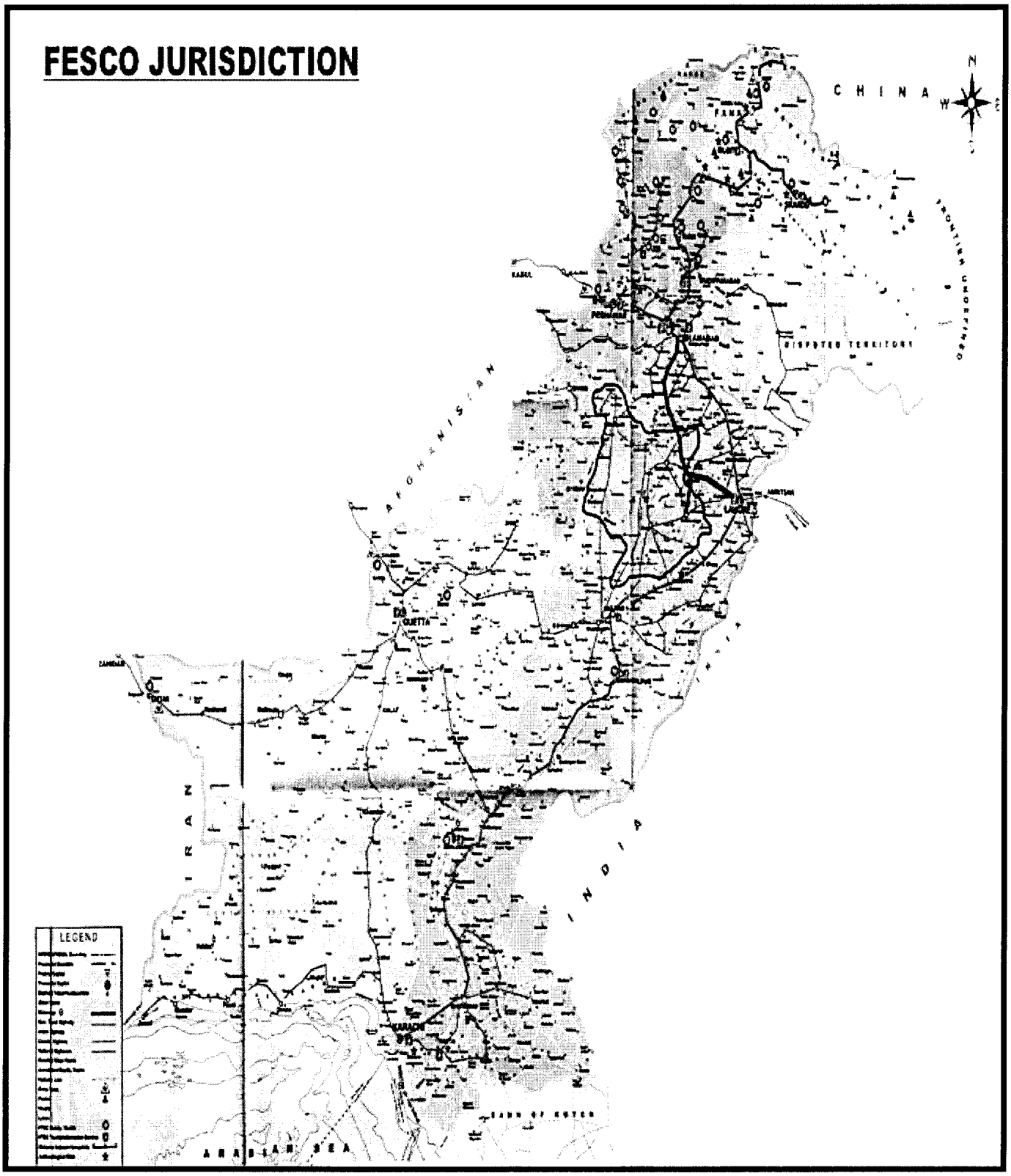


Figure :-2.1 Project Location showing FESCO Jurisdiction

3.0 BRIEF DETAIL OF PROJECT

2. The conditions of the power transmission system in Pakistan (FESCO too) are inadequate to meet rapidly growing demand for electrical power. This situation limits the national development and economic growth. To cope with the power constraints, the existing power transmission infrastructure has to be improved, expanded and upgraded. System losses are to be reduced. The overall contribution of power infrastructure also requires institutional arrangements and capacity that support strategic management of the sector, and planning and management of investments. Overall the proposed Power Distribution Enhancement Investment Programme-Multi-Tranche Financing Facility (PDEMFF) financed by ADB, has been designed to address both investment and institutional aspects of electrical power sector. Basic Information of the project is given Section 1.

3.1 Objectives of the Project

3. The overarching objectives of the "Power Distribution Enhancement Investment Program **Tranche-III**" are to increase the efficiency, reliability and quality of electric power supply. The project aims to achieve:-
   - Strengthening of electricity transmission network to reduces bottle necks and improves system reliability or quality.
   - Strengthening electricity distribution network to reduce losses and improvement in quality of supply.
   - To upgrade the existing power infrastructure.
   - This will be achieved by extension/augmentation of existing grid stations, provision of capacitors, 11kv incoming/outgoing couplers, circuit barkers & other relevant electric equipment.

3.2 Scope of Work

4. During the entire duration of the loan period, construction of two (02) new Grid Station at the locations of City Grid Faisalabad near Jhal Khanuana and Shahbaz Khel District Mianwali, Conversion of four (04) number 66Kv existing Grid Station into 132Kv and 05 new 132Kv Transmission Line (D/C & SDT) covering 104.31 km (total length) are proposed to be executed under **"Power Distribution Enhancement Investment Project (PDEIP) – Tranche-3"** on **Turn Key Basis**. Tranche-3 FESCO Subprojects consist of:

Sr. No	Category of Project	Location
1.	Construction of 132 KV Grid Stations	i. GIS Grid Station Faisalabad City, near Railway Colony Faisalabad ii. AIS Grid Station Shahbaz Khel District Mianwali

2.	Conversion of Existing 66 KV to 132 KV Grid Stations	i. 18-Hazari (District Jhang) ii. Garh Maharaja (District Jhang) iii. Rakh Dagran (District Bhakkar) iv. Kala Bagh (District Mianwali)
3.	Construction of New 132 KV Transmission Lines	i. 48.1 Km Double Circuit (DC) 132Kv Transmission Line (T/L) from 220 KV Grid Station Toba Tek Singh to 132 KV Grid Station Havelli Bahadar (HB) Shah ii. 21.10 Km D/C 132 KV T/Line from H B Shah Grid Station to 18- Hazari DGS, iii. 35.22Km D/C 132 KV T/Line from 18-Hazari Grid Station to GM Raja Grid Station , iv. 1.35 km D/C 132 KV T/Line from Piplan Bhakkar In & Out Rakh Dagran v. 3.1 Km D/C 132 KV T/Line from Jinnah Hydropower-220 KV Daud Khel In & Out Kala Bagh

3.3 Procurement Status of Works under Tranche-III

5. Project components are divided into four contract packages, which are proposed to be executed through Turn Key Projects. The detail of which is as under:

TRANCHE-III SCOPE OF WORK AND STATUS OF PROCUREMENT

Sr. No	Package	Contract No	Description		Name of Contractor	Date of Agreement	Contract Amount	Effective Date	Completion Period	Completion Period	Remarks
1	1	ADB- III-FESCO-01-2013	Construction of Grid Station s	GIS Faisalabad AIS Shahbaz Khel	M/S FEPEC-CCCE-Sieyuan JV	22-06-15	CNY 1,918,174+PKR 307,990,428	28-3-16	365 days	27-3-17	Base Line Data of NEQS tested. Design Data approved. Soil Investigation carried out
2	2	ADB- III-FESCO-02-2013	Conversion of 66 KV To 132 KV Status	18-Hazari GM Raja Rakh Dagran Kalabagh	M/S Pinggao Group	**24-5-16**	US$ 4,288,868 +PKR 403,127,215		365 days		Contract Agreement has been signed on 24-5-16 & contractor is mobilizing to take up the Construction Activities.
3	3	ADB- III-FESCO-03-2013	Construction of New 132 KV Transmission Lines	HB Shah to 18-Hazari (21.10 Km) 18-Hazari to GM Raja (35.22 Km) Feed for Rakh Dagran (1.35 Km) Feed for Kalabgh (3.1Km)	M/S POTENTIAL TBEA JV Lahore	23-01-15	US$ 1,518,611 +PKR 323,388,717	24-03-15	365 days	27-11-16 Extended	Monitoring Data of NEQS tested. Work in progress Monitoring Data of NEQS tested. Work in progress Monitoring Data of NEQS tested. Work in progress. Monitoring Data of NEQS tested. Work in progress
4	4	ADB-T-III-FESCO-04-2013	Construction of New 132 KV Transmission Line	220 KV Toba Tek Singh to HB Shah (48.3Km)	M/S ICC(Pvt) Limited Lahore	10-02-15	US$ 1,319,936 +PKR 367,460,065	22-04-15	365 days	21-04-16 (EOT in pipe line)	Base Line Data of NEQS tested at start and terminal points of Transmission Line. . Work in progress

4.0 PRESENT EXECUTION STATUS OF TRANSMISSION LINES

4.1 Package I:- Construction of 02 No New Grid Stations

6. Contractor M/S FEPEC-CCCE-Sieyuan JV has mobilized to the sites of 132 KV GIS City Grid Station Faisalabad and 132 KV AIS Grid Station Shahbaz Khel Mianwali. Contractor has arranged Soil Investigation on both the sites and on the basis of soil investigation, prepared the GLOs, Construction Drawings. Construction Drawings of Civil Works has been approved by Chief Engineer Development FESCO. Further contractor has arranged testing of Environmental Indicators from EPA approved Lab. The results of testing are given in the report. Civil Works on site has been started on both Grid Stations. Contractor has prepared Site Specific Environmental Management Plans (SSEMP) and submitted to M/s SMEC FMC Consultants for their review and arranging approval of ADB.

4.2 Package II:- Construction of 02 No New Grid Stations

7. Contract Agreement for conversion of four (04) No existing 66 KV to the level of 132 KV has been signed with M/S Pinggao Group on May 24,2016 . GLO has been handed over to Contractor. FESCO had arranged the approval of Civil Drawing from Design NTDC. Design Data of Electrical Equipment has been sent to Design NTDC for approval. CV of Environmental /OHS Specialist has been approved by FESCO for deployment of requisite at site. Contractor had submitted Soil Investigation Plan to FESCO for approval. Civil Work Contractor is mobilizing for successful execution of works.

4.3 Package III:- a) Construction of 132 KV T/Line from HB Shah to 18-Hazari

8. Proposed Transmission Line being executed through Turn Key Basis .76 No of total 92 Nos Tower Foundations has been concreted. 49 No of total 92 Nos Tower has been erected. Stringing of conductors over a stretch of 21.10 Km will be started on concreting/erection of remaining towers. Payments for damage belonging to Affected Person are being made. Up to June 30, 2016, 56 No Affected Person (AP) has been paid the compensation amounting to Rs. 754,229/ for foundation. Crop Compensation for the remaining foundations and erection has been processed and will be paid to affected person shortly. After

due payments as per actual route, Land Acquisition and Resettlement Plan (LARP) will be updated.

4.4 Package III:- b) **Construction of 132 KV T/Line from 18-Hazari to GM Raja**

9. Proposed Transmission Line being executed through Turn Key Basis. 142 No of total 142 Nos Tower Foundations has been concreted. 127 No of total 142 Nos Tower has been erected. Stringing of conductors over a stretch of 35.22 Km will start just after erection of remaining towers. Payments for damage belonging to Affected Person are being made. Up to June 30, 2016, 107 No Affected Person has been paid the compensation amounting to Rs. 1,299,594. Crop Compensation for the remaining foundations and erection has been processed and will be paid to affected person shortly. After due payments as per actual routs, Land Acquisition and Resettlement Plan (LARP) will be updated.

4.5 Package III:- c) **Construction of 132 KV T/Line Feed for Rakh Dagran**

10. Proposed Transmission Line being executed through Turn Key Basis. 4 No of total 4 Nos Tower Foundations has been concreted. 3 No of total 4 Nos Tower has been erected. Stringing of conductors over a stretch of 1.32 Km will commence shortly. Crop Compensation for the damages on foundations and erection has been processed and will be paid to affected person shortly. After due payments as per actual routs, Land Acquisition and Resettlement Plan (LARP) will be updated.

4.6 Package III:- d) **Construction of 132 KV T/Line Feed Kalabagh**

11. Proposed Transmission Line being executed through Turn Key Basis. .04 No of total 13 Nos Tower Foundations has been concreted. Stringing of conductors over a stretch of 3.1 Km will start after concreting/erection of towers. Crop Compensation for the damages on foundations has been processed and will be paid to affected person shortly. After due payments as per actual routs, Land Acquisition and Resettlement Plan (LARP) will be updated.

4.7 Package IV:- a) **Construction of 132 KV T/Line from 220 KV TT Singh to HB Shah**

12. Proposed Transmission Line being executed through Turn Key Basis. No of total 224 Nos Tower Foundations has been concreted. 131 No of total 224 Nos Tower has been erected. Stringing of conductor over a stretch of 48.53 Km will be started shortly. Payments for damage belonging to Affected Person are being made. Up to June 30, 2016, 76 No Affected Person has been paid the compensation pertaining to damages due foundation, amounting to Rs. 1,078,178/- whereas 119 cases for foundation construction compensation amounting to Rs. 1,616,330/- has been approved and will paid upto July 15, 2016. After due payments as per actual routes, Land Acquisition and Resettlement Plan (LARP) will be updated.

13. Following Environmental and OHS activities are adhered at site:-

- Complaint Register as per requirement of GRM, are made available at site to address the complaints.
- PPEs are available at sites and workers are being trained for using PPEs. First Aid Boxes are available at site and workers are trained to use the facility.
- No Child Labour is deployed at site for execution of work.
- Workers are living in Hygienic Environment.
- Contractor has provided housing accommodation and amenities (all fencing, electricity supply, sanitation, cookhouses, fire prevention, water supply) for all his supervisory staff and labour, employed for the purposes of execution
- Safety signed board and other descriptive boards be erected at appropriate places. Contractor made arrangement to cordon off the construction area with reflecting tapes to avoid interruption of irrelevant person and insurance of infrastructure and equipment.
- Contractor had provided and maintained at his own cost all lights, guards, fencing, warning signs and watching.
- Ample drinking water is available at site.
- No fire wood was used for cooking purposes.
- Arrangements were made in such a way that there are no damages to landscaping. Proper drainage facilities were available.
- There was no threat to wild life due to execution of Tranche-III works.

5.0 CHANGES IN PROJECT ORGANIZATION

5.1 Project Management Unit (PMU) FESCO

14. To effectively plan, execute and monitor the Power Distribution Enhancement Investment Program , a Project Management Unit (PMU) has been established under Chief Engineer (Development) comprising of five sections i.e. (i) Planning, Scheduling & Coordination (PS&C),(ii) Procurement, (iii) Project Financing (PF), (iv) Grid System Construction (GSC) and (v) Environment & Social Safeguard (E&SS).

5.2 Transfer/Posting of Key Staff

15. Since last bi-annual environmental report for the period of July 2015 to December 2015, following are changes in Key Staff :-

a) **Mr. Masud Salah-ud-Din** while working as Chief Engineer Development PMU has been promoted to the Post of General Manager Operation FESCO on 24-05-2016 and Mr. Muhammad Jahangir taken the charge of Chief Engineer Development PMU on 24-05-2016. However Chief Engineer Development placed under General Manager Operation.

b) **Mr. Baqar Ali Zaidi** is working as Director Procurement since 23-02-2015.

c) **Mr. Ali Raza** is working as Director PS&C PMU since 23-02-2015.

d) **Mr. Muhammad Sharif Malik** remained as Director Environment & Social Safeguard during the period of report.

e) **Mr. Nazir Ahmad** Project Accountant took the acting charge of Director Project Financing on 07-04-2015.

5.3 Environmental & Social Safeguard Cell

16. Muhammad Sharif Malik Manger Environment & Social Safeguard supervised the activities of E&S Cell. Mr. Yasir Iftikhar Assistant Director Environment assisted the E&S Cell while post of Assistant Director Social remained vacant during the period of report.

17. On the advice of ADB, BOD FESCO in its 131st /19th meeting dated 22-10-2014 has approved the appointment of Mr. Muhammad Saleem Sociologist having 26 year experience in social sector. Mr Muhammad Saleem was engaged as Social Safeguard Expert on 6 months contract basis, vide o/o No 16529/A-13 /E&S dated 01-01-2015. The Contract Period of Social

Safeguard Expert expired on 30-06-2015. Further BOD in its meeting dated 16-06-2015, approved the retention of Mr. Muhammad Saleem as Social Safeguard Expert for another 06 months i.e 01-07-2015 to 31-12-2015. However Mr. Muhammad Saleem has resigned from the post of Social Safeguard Expert w.e.f. 01-09-2015. Case for hiring of another professional is under consideration of BOD FESCO.

5.4 Relationship with Contractors, Owner & Lender etc

18. Contracts under Tranche-III including civil works are being administered by **Grid System Construction (GSC)** Directorate FESCO. Through their coordination, Environmental & Social Safeguard Cell maintains working relation with the contractors for effective implementation of EMMP.

PART II

6.0 ENVIRONMENTAL MONITORING

6.1 Proposed Works & Environment

19. Effects of proposed works on Community & Environments

- Proposed areas of work are not environmentally sensitive.
- The Forestry Act, 1927 empowers the government to declare certain areas as Reserve Forest. Binding of this law is not applicable to the subproject works due to :
  - ❖ There is no reserved or protected area in the vicinity of the sub-project locations
  - ❖ No wood is being use for fueling.
  - ❖ No trees/ plants are removed from the locations of existing conversion grid stations because works are to be carried within existing semi paved yards. For Transmission Line sub-projects, tree coming under corridor of influence (COI) will be removed at the time of stringing with approval of the Employer. Turn Key Contractors are contractually obligated to plant the trees in lieu of remover/uprooted on having the ratio of 3:1.
  - ❖ During Moon Soon Plantation campaign, lower statue tree are being planted. Budget provision exists in the contracts.
  - ❖ At the time, owner of trees will be compensated as per rules and remains of trees will be handed over to the owners. Proper record of uprooted trees will be maintained for due scrutiny.
  - ❖ If some tree (within the boundary of existing Grid Station), comes under outgoing feeders, only trimming is required as a routine practice. No Reserved or Protected Forests areas exist in the vicinity / proximity of existing Grid Stations.
- The **Punjab Wildlife Protection Ordinance, 1972** empowers the government to declare certain areas reserved for the protection of wildlife and control activities within in these areas. It also provides protection to endangered species of wildlife. **As no activities are planned in these areas,**

no provision of this law is applicable to the proposed subproject because no wetlands & estuaries exist near to sub-project locations.

- Proposed works have minimal effects on Water Quality & Ambient Air quality & Noise naissance.
  - In view of modified nature of the habitats, there exists no environmental hot spot.
  - No blasting is to be carried out during execution of project
  - No hospital & school are located within the vicinity of sub-project locations
  - No soil erosion is expected during execution because works are to be carried out on nearly flat land.
- At the start of project, Public Awareness & Consultation Campaign already launched which reveals the positive gesture of interviewed public. Even then public consultation, being the primary requirement, has been carried out and made part of EIA.

20. Since the establishment of Environment and Social Safeguard Cell in PMU on **April 2011,** following steps were taken toward strengthening Environmental evaluations/monitoring :-
    - Collection of literatures & review pertaining to job requirement
    - Reconnaissance survey of the locations of existing Grid Stations
    - Collection of relevant data for assessment of the project category
    - Social survey regarding acceptability of the project
    - Preparation of Environmental Impact Assessment (EIA) & Environmental Management & Monitoring Plan. For compliance of Section 12 of Environmental Protection Act 1997, **EIA Report has been prepared and sent to Environmental Protection Department (EPD) for according NOC. Representatives/Inspectors of District Environment Officers of relevant Districts have visited the sites and prepared Site Inspection Reports were sent to EPD for their consideration.**
    - In compliance to para 10 of EPA Regulation 2000 , Notice for Public Hearing were published in Daily NEWS dated January 09,2014 and Daily Nawa-e-Waqat dated January 08,2014 . Public Hearing being the mandatory requirement for according NOC to EIA , was conducted at 10-02-2014 at PMU office FESCO Faisalabad and 13-02-2014 at 132 KV Grid Station Mianwali . Media campaign was launched and banners were fixed at prominent places. In Public Hearing, concerned District Officer Environment, Media, Civil Defense, Interested public and other stakeholders participated. Accordingly public hearing was reported in leading Newspapers.

- Finely Environmental Protection Department (EPD) Lahore accorded the requisite approval vide Letter No.DD (EIA)/EPA/F-44(EIA)/2504/2013/793 dated 09-05-2014. Compliance Report to the approval has been submitted to Director General, EPD Lahore vide letter No 3557-62 Dated 03-06-2014 with a copy to ADB. Periodic Reports will be submitted to Environmental Protection Department (EPD) on the start of construction work.

6.2 Water Quality Monitoring

21. On the start of construction work, water samples with following description were collected from the locations within project area for base line data :-

A. **Package I : GIS Grid Station Faisalabad** (Mosque Tape) and **AIS Grid Station Mianwali** (Over Head Tank)

B. **Package III:- 132 KV Transmission Line Feed for Kalababagh** (a) Over head Tank of 66 KV Grid Station Kalababagh (b) Hand Pump (along the road bound to Kot Chandna) near Jinah Hydropower Project

C. **Package III:- 132 KV Transmission Line Feed for Rakh Dagran** (a) Motor Pump within the premises of 66 KV Grid Station Rakh Dagran (b) Hand Pump (on right of Distributory near propose tower No 03)

D. **Package III:- 132 KV Transmission Line GM Raja to 18-Hazari** (a) Motor Pump within the premises of 66 KV Grid Station GM Raja (b) Tube Well of Mr. Muhammad Riaz of Chah Laskani along corridor of GM Raja to 18 Hazari Transmission Line

E. **Package III:- 132 KV Transmission Line HB Shah to 18-Hazari** (a) Motor Pump within the premises of 66 KV Grid Station 18-Hazari (b) Motor Pump within the premises of 132 KV KV Grid Station HB Shah

22. Samples collected from above locations were got tested for the following parameters ,from the EPD approved lab:-

i. pH
ii. Color
iii. Total Dissolved Solids (TDS)
iv. Turbidity
v. Taste & ordor
vi. Total Hardness as $CaCo_3$
vii. Nitrate as (NO_3)
viii. Cadmium
ix. Antimony
x. Barium
xi. Chloride
xii. Aluminum

xiii. Manganese
xiv. Mercury
xv. Iodine
xvi. Zinc
xvii. Boron
xviii. Copper
xix. Cyanide
xx. Nickle

23. Copies of Test Results of Base Line has been sent to respective District Officers Environment , ADB & EPD. Soft copies of Test Results has been generated and are being made part of Bi-Annual Environmental Monitoring Report (Annex- A (Package-I) , B (Package-III) & C(Package-IV) . Moreover for comparison, Bi-annual samples (Package 1 &4) will be collected and results to this effect will be made part of periodic monitoring reports. Comparison of National Environmental Quality Standards (NEQS) with Base line data will serve as reference for upcoming Bi-Annual Environmental Monitoring Results.

6.3 Ambient Air Quality Monitoring

24. Air sampling requires a special type of sampler. Contractors for Turn Key Contractors arranged the sampling of Ambient Air from the following locations:

A. **Package I : GIS Grid Station Faisalabad** and **AIS Grid Station Mianwali**

B. **Package III:- 132 KV Transmission Line Feed for Kalababagh** (a) Premises of 66 KV Grid Station Kalababagh

C. **Package III:- 132 KV Transmission Line Feed for Rakh Dagran** (a) Premises of 66 KV Grid Station Rakh Dagran

D. **Package III:- 132 KV Transmission Line GM Raja to 18-Hazari** (a) Premises of 66 KV Grid Station GM Raja

E. **Package III:- 132 KV Transmission Line HB Shah to 18-Hazari** (a) Premises of 66 KV Grid Station 18-Hazari

F. **Package IV:- 132 KV Transmission Line from 220 KV TT Singh to HB Shah** (a) Premises of 220 KV Grid Station TT Singh

25. Samples collected from above locations were got tested for the following parameters ,from the EPD approved lab:-

i. SO_2
ii. NO_2

iii. CO

iv. Particulate Matter

26. Copies of Test Results of Base Line has been sent to respective District Officers Environment, ADB & EPD. Soft copies of Test Results has been generated and are being part of Bi-Annual Environmental Monitoring Report (Annex- D (Package-1) ,E (Package-2) & F (Package-3) . Moreover for comparison Bi-annual samples will be collected and results to this effect will be made part of periodic monitoring reports. However comparison of National Environmental Quality Standards (NEQS) with Base line data will serve as reference for upcoming Bi-Annual Environmental Monitoring Results

6.4 Noise & Vibration

27. As per National Environmental Quality Standards, permissible noise level is upto 85 dBA when measured with a sound meter at a distance of 7.5 meters from the source. In Power Distribution Enhancement Investment Programme Tranch-III, source of noise emission be the Power Transformers. As per Technical Data of Power Transformer, maximum noise emission at any time during the useful life of Power Transformer is well below than NEQS. Moreover Power Transformers are not installed yet.
28. Noise from vehicles and other powered mechanical equipment is intermittent. Use of Power Equipment is just once during unloading of Power Transformer and is being of temporary nature. Maintenance Vehicle can come only on requirement basis. Based on professional experience background, day time noise levels are probably well below 55dBA.DISCOs have carried out noise level measurements at various sub stations and transmission line locations within the system .These analyses showed that Leq values much below the 85 dBA limit prescribed under the NEQs established by the EPA or the 75 dBA used by DISCOs/NTDC/PEPCO in the equipment specifications. Typical values were: average 46.21 dBA ; high 63.14 dBA ; and low 34.35 dBA .
29. No blasting is to be encountered during Tranche-III Works.
30. For Base Line Data of Noise, sampling was arranged by Turn Key Contractors were collected for 24 hours sampling requires a special type of sampler. Contractors for Turn Key Contractors arranged the sampling of Ambient Air from the following locations:

A. **Package I : GIS Grid Station Faisalabad** and **AIS Grid Station Mianwali**

B. **Package III:- 132 KV Transmission Line Feed for Kalababagh** (a) Premises of 66 KV Grid Station Kalababagh

C. **Package III:- 132 KV Transmission Line Feed for Rakh Dagran** (a) Premises of 66 KV Grid Station Rakh Dagran

D. **Package III:- 132 KV Transmission Line GM Raja to 18-Hazari** (a) Premises of 66 KV Grid Station GM Raja

E. **Package III:- 132 KV Transmission Line HB Shah to 18-Hazari** (a) Premises of 66 KV Grid Station 18-Hazari

F. **Package IV:- 132 KV Transmission Line from 220 KV TT Singh to HB Shah** (a) Premises of 220 KV Grid Station TT Singh

31. Collected samples were analyzed by automatic devises of EPD approved Labs. Copies of Test Results of Base Line has been sent to respective District Officers Environment , ADB & EPD. Soft copies of Test Results has been generated and are being part of Bi-Annual Environmental Monitoring Report (Annex- **G ,H & I**) . Moreover for comparison Bi-annual samples will be collected and results to this effect will be made part of periodic monitoring reports. However comparison of National Environmental Quality Standards (NEQS) with Base line data will serve as reference for upcoming Bi-Annual Environmental Monitoring Results.
32. **Soil Monitoring :** Soil Samples were collected from the locations of new grid station i.e GIS Faisalabad & AIS Shahbaz Khel Mianwali under Package 1 and 220 KV Grid Station TT Singh & 132 KV Grid Station HB Shah under Package IV. Base Line Data of Soil Test Results are tabulated at **Annex J** (Package 1) & **K** (Package 4).

6.5 Flora & Fauna Monitoring

33. Major parts of the original habitats have been modified into new habitats primarily as a result of extensive cultivation and expanding urban center as well as rural settlements. There is no wetland in the project area. No Protected Areas exists within the project premises. No Flora & Fauna is going to be disturbed due to execution of this project.

7.0 ENVIRONMENTAL MANAGEMENT

34. Environmental Management & Monitoring Plan (EMMP) has been prepared with the consultation of Implementing Agency i.e. Grid System Construction Directorate (GSC) who keep track of its implementation. Moreover EMMP is made a part of EIA Report, submitted to Environmental Protection Department (EPD) for its approval. Upon approval from EPD, EIA Report including EMMP is placed on FESCO Web Site. As per ADB disclosure policy, EMMP has been sent to Grid System Operation (GSO) for placement d at prominent location of Grid Stations and in the offices of concerned Sub Divisional Officer Operations. Moreover the copies of EIA Reports including EMMP are made part of Contract Documents. During external monitoring of M/s SMEC, EMP and test results checked at Grid Station sites.
35. During physical execution of works, Environmental Management & Monitoring Plan (EMMP) is being followed in true spirits. During external Monitoring, M/S SMEC (May 10 to May 13, 2016) had meeting with Turn Key Contractors of Transmission Lines and emphasized for true implementations of EMPs.
36. As per provision of ADB Aide Memoire June 03, 2015 Site Specific Environmental Management Plan (SSEMP) of 02 new grid stations has been prepared by the contractor and has been submitted to M/s SMEC FMC Consultant for their review and arranging approval from ADB. After approval the same is being implemented accordingly.

7.1 Site Inspections

37. Since the establishment of Environment & Safeguard Cell PMU in April 2011, emphases during site visits are made to collect correct information, analyze them and report accordingly.

7.2 Field Surveys

7.2.1 Purpose

a. **At initial stage** , Field Surveys were conducted for

- Social Awareness Campaign
- Supervision of Sub Soil Investigation

b. **At the time of physical execution**, Field visits were carried out for :-

- Conduct environmental and social assessments in confirmatory to EMP.

- Initial screening of indigenous and vulnerable people.
- Project resettlement categorization.
- Collection of Samples for NEQS testing (Groundwater & Ambient Air Quality)
- Implementation of EMMP

7.3 **Visited Project Sites**

38. E&SS visited Tower Foundation locations along the Routes of Transmission Lines included in Package 1, 3 & Package 4 for supervision of subsoil investigation, concreting of Tower Foundation and launching of Social Awareness Campaign. On physical execution, E&SS Cell PMU is visiting the project sites for social mobilization, compliance of Management Plans i.e. Waste Disposal Plan, Erosion Control Plans.

8.0 Findings/ Observations

39. During site visits at the time of preparation of project , following observations were made :-

- There are no potential significant adverse environmental and social impacts associated with the subproject.
- Suitable control measures are required in project area to minimize/ mitigate environmental impacts, disruption, and contamination of surroundings arising out due to construction material waste disposal.
- No potential damages to water channel, land, construction nuisance/ noise/ air/ wastewater pollution will likely to be occurred in project area.
- During public consultation awareness campaign none registered any outright opposition to subproject

BASELINE AND MONITORING DATA OF NEQS GROUND WATER QUALITY, AMBIENT AIR & NOISE OF PACKAGE I, III & IV

ANNEX-A

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

A. 66 KV Grid Station Kalabagh

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.3	6.9
2	Color	TCU	>15	6	0
3	Total Dissolved Solids (TDS)	mg/l	<1000	95	433
4	Turbidity	mg/l	<5	2	0
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as $CaCO_3$	mg/l	<500	115	72
7	Nitrite as (NO_3)	mg/l	<50	14.8	12
8	Nitrite as NO_2	mg/l	3	1.4	0.004
9	Cadmium	mg/l	0.01	N.D	0.01
10	Arsenic	mg/l	<0.05	0.025	N.D
11	Antimony	mg/l	0.005	N.D	N.D
12	Barium	mg/l	0.7	0.08	0.01
13	Chloride	mg/l	250	74	19
14	Fluoride	mg/l	<1.5	0.6	0.02
15	Aluminum	mg/l	0.2	0.008	0.03
16	Manganese	mg/l	0.5	0.10	0.01
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	___	N.D	N.D
19	Zinc	mg/l	5.0	0.13	0.02
20	Boron	mg/l	0.3	0.05	0.03
21	Copper	mg/l	2	0.27	.002
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	0.003	N.D

ANNEX-B

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

B. Along the proposed 132 KV Transmission Line (feed for Kalabagh) Hand Pump Near Jinah Hydropower Kalabagh District Mianwali

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.7	8.3
2	Color	TCU	>15	7	9
3	Total Dissolved Solids (TDS)	mg/l	<1000	83	462
4	Turbidity	mg/l	<5	2	2
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as CaCo3	mg/l	<500	159	123
7	Nitrite as (NO3)	mg/l	<50	10.0	19
8	Nitrite as NO2	mg/l	3	0.9	0.07
9	Cadmium	mg/l	0.01	N.D	N.D
10	Arsenic	mg/l	<0.05	0.02	0.05
11	Antimony	mg/l	0.005	N.D	N.D
12	Barium	mg/l	0.7	0.02	3
13	Chloride	mg/l	250	104	127
14	Fluoride	mg/l	<1.5	0.4	0.03
15	Aluminum	mg/l	0.2	0.008	0.07
16	Manganese	mg/l	0.5	0.16	0.02
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	___	N.D	N.D
19	Zinc	mg/l	5.0	0.15	1.5
20	Boron	mg/l	0.3	0.09	0.08
21	Copper	mg/l	2	0.10	0.6
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	0.01	0.001

ANNEX-C

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

C. 66 KV Grid Station Rakh Dagran Bhakhar

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.8	7.3
2	Color	TCU	>15	4	0
3	Total Dissolved Solids (TDS)	mg/l	<1000	68	421
4	Turbidity	mg/l	<5	1	0
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as CaCo3	mg/l	<500	133	65
7	Nitrite as (NO3)	mg/l	<50	7.36	19
8	Nitrite as NO2	mg/l	3	0.5	0.11
9	Cadmium	mg/l	0.01	N.D	N.D
10	Arsenic	mg/l	<0.05	0.025	N.D
11	Antimony	mg/l	0.005	N.D	N.D
12	Barium	mg/l	0.7	0.01	0.03
13	Chloride	mg/l	250	121	15
14	Fluoride	mg/l	<1.5	0.4	0.02
15	Aluminum	mg/l	0.2	0.003	0.01
16	Manganese	mg/l	0.5	0.08	0.01
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	___	N.D	N.D
19	Zinc	mg/l	5.0	0.11	0.02
20	Boron	mg/l	0.3	0.05	0.04
21	Copper	mg/l	2	0.07	0.007
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	N.D	N.D

N.D. –Not Detected

ANNEX-D

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

D. Along the proposed 132 KV Transmission Line (feed for Rakh Dagran) Hand Pump close to Distributory Near Tower No 03 Rakh Dagran District Bhakkar

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.5	6.8
2	Color	TCU	>15	5	0
3	Total Dissolved Solids (TDS)	mg/l	<1000	121	415
4	Turbidity	mg/l	<5	1	0
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as CaCo3	mg/l	<500	140	65
7	Nitrite as (NO3)	mg/l	<50	13.3	12
8	Nitrite as NO2	mg/l	3	1.02	0.01
9	Cadmium	mg/l	0.01	N.D	0.006
10	Arsenic	mg/l	<0.05	0.025	0
11	Antimony	mg/l	0.005	N.D	0
12	Barium	mg/l	0.7	0.09	0.01
13	Chloride	mg/l	250	93	32
14	Fluoride	mg/l	<1.5	0.8	0.31
15	Aluminum	mg/l	0.2	N.D	0.006
16	Manganese	mg/l	0.5	0.06	0.03
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	___	N.D	N.D
19	Zinc	mg/l	5.0	0.31	0.92
20	Boron	mg/l	0.3	0.01	0.03
21	Copper	mg/l	2	0.03	0.002
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	0.01	N.D

ANNEX E

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

E. 66 KV Grid Station 18 Hazari

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.6	8.1
2	Color	TCU	>15	8	0
3	Total Dissolved Solids (TDS)	mg/l	<1000	149	416
4	Turbidity	mg/l	<5	1	0
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as CaCo3	mg/l	<500	113	123
7	Nitrite as (NO3)	mg/l	<50	3.8	6.4
8	Nitrite as NO2	mg/l	3	0.62	0.049
9	Cadmium	mg/l	0.01	N.D	0
10	Arsenic	mg/l	<0.05	0.025	0.005
11	Antimony	mg/l	0.005	N.D	N.D
12	Barium	mg/l	0.7	0.11	0.09
13	Chloride	mg/l	250	122	45
14	Fluoride	mg/l	<1.5	0.73	0.21
15	Aluminum	mg/l	0.2	0.01	0.001
16	Manganese	mg/l	0.5	0.39	0.33
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	---	N.D	N.D
19	Zinc	mg/l	5.0	0.74	0.01
20	Boron	mg/l	0.3	0.13	0.08
21	Copper	mg/l	2	0.77	0.23
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	N.D	N.D

ANNEX-F

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

F. 132 KV Grid Station Havelli Bahadar Shah (Motor Pump) Starting Point of 132 KV Proposed Transmission Line from HB Shah to 18-Hazari

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.6	8.3
2	Color	TCU	>15	6	0
3	Total Dissolved Solids (TDS)	mg/l	<1000	89	441
4	Turbidity	mg/l	<5	21	0
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as CaCo3	mg/l	<500	97	201
7	Nitrite as (NO3)	mg/l	<50	5.32	7.2
8	Nitrite as NO2	mg/l	3	0.81	0.11
9	Cadmium	mg/l	0.01	N.D	0.007
10	Arsenic	mg/l	<0.05	0.025	0.025
11	Antimony	mg/l	0.005	N.D	N.D
12	Barium	mg/l	0.7	0.01	0.08
13	Chloride	mg/l	250	113	29
14	Fluoride	mg/l	<1.5	0.45	0.61
15	Aluminum	mg/l	0.2	0.09	0.004
16	Manganese	mg/l	0.5	0.12	0.004
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	___	N.D	N.D
19	Zinc	mg/l	5.0	0.75	0.61
20	Boron	mg/l	0.3	0.06	0.03
21	Copper	mg/l	2	0.05	0.003
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	0.01	N.D

ANNEX-G

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

G. 66 KV Grid Station G.M RAJA.

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.3	8.6
2	Color	TCU	>15	4	0
3	Total Dissolved Solids (TDS)	mg/l	<1000	76	402
4	Turbidity	mg/l	<5	1	0
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as CaCo3	mg/l	<500	105	106
7	Nitrite as (NO3)	mg/l	<50	11.26	5.8
8	Nitrite as NO2	mg/l	3	0.14	0.023
9	Cadmium	mg/l	0.01	N.D	0
10	Arsenic	mg/l	<0.05	N.D	0.005
11	Antimony	mg/l	0.005	N.D	ND
12	Barium	mg/l	0.7	0.01	0.14
13	Chloride	mg/l	250	89	89
14	Fluoride	mg/l	<1.5	0.39	0.63
15	Aluminum	mg/l	0.2	0.07	0.002
16	Manganese	mg/l	0.5	0.08	0.39
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	___	N.D	N.D
19	Zinc	mg/l	5.0	0.08	0.09
20	Boron	mg/l	0.3	0.04	0.08
21	Copper	mg/l	2	0.17	0.56
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	N.D	N.D

ANNEX-H

GROUNDWATER QUALITY TEST RESULTS OF PACKAGE III

H. Tubewell of Dera Muhammad Riaz of Chah Laskani along the propsed Transmission Line from 18-Hazari to G.M Raja

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	Monitoring Data May 2016
1	pH	--	6.5-8.5	7.5	8.5
2	Color	TCU	>15	6	0
3	Total Dissolved Solids (TDS)	mg/l	<1000	123	432
4	Turbidity	mg/l	<5	2	0
5	Taste & Odor	mg/l	Non Objectionable	OK	OK
6	Total Hardness as CaCo3	mg/l	<500	204	165
7	Nitrite as (NO3)	mg/l	<50	9.55	9.3
8	Nitrite as NO2	mg/l	3	0.81	0.51
9	Cadmium	mg/l	0.01	N.D	0.001
10	Arsenic	mg/l	<0.05	0.025	.0025
11	Antimony	mg/l	0.005	N.D	ND
12	Barium	mg/l	0.7	0.06	0.009
13	Chloride	mg/l	250	127	54
14	Fluoride	mg/l	<1.5	0.39	0.61
15	Aluminum	mg/l	0.2	0.06	0.006
16	Manganese	mg/l	0.5	0.34	0.33
17	Mercury	mg/l	0.001	N.D	N.D
18	Iodine	mg/l	___	N.D	N.D
19	Zinc	mg/l	5.0	1.01	0.12
20	Boron	mg/l	0.3	N.D	0.06
21	Copper	mg/l	2	0.06	0.12
22	Cyanide	mg/l	0.05	N.D	N.D
23	Nickel	mg/l	0.02	N.D	N.D

ANNEX-I

AMBIENT AIR QUALITY TEST RESULTS OF PACKAGE III

A. 66 KV Grid Station Kalabgh District Mianwali

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	**Monitoring Data May 2016**
1.	Sulpher Dioxide (SO_2)	mg/ m^3	120	13.6	9.6
2.	Oxides of Nitrogen (NO_2)	mg/ m^3	80	10.7	8.7
3.	Carbon Monoxide (CO)	mg/ m^3	5	0.28	0.27
4.	Particulate Matter (SPM)	µg/m^3	550	13.8	44.9

B. 66 KV Grid Station Rakh Dagran District Bhakkar

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	**Monitoring Data May 2016**
1.	Sulpher Dioxide (SO_2)	mg/ m^3	120	13.3	12.7
2.	Oxides of Nitrogen (NO_2)	mg/ m^3	80	8.4	7.2
3.	Carbon Monoxide (CO)	mg/ m^3	5	0.46	0.44
4.	Particulate Matter (SPM)	µg/m^3	550	30.0	33.1

C. 66 KV Grid Station 18 Hazari District Jhang

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	**Monitoring Data May 2016**
1.	Sulpher Dioxide (SO_2)	mg/ m^3	120	12.8	15
2.	Oxides of Nitrogen (NO_2)	mg/ m^3	80	10.6	9.9
3.	Carbon Monoxide (CO)	mg/ m^3	5	0.32	0.55
4.	Particulate Matter (SPM)	µg/m^3	550	19.3	50.4

D. 66 KV Grid Station Garh Mahraja District Jhang

Sr. No	Parameter	Unit	NEQS Limiting Value	Baseline Data October 2015	**Monitoring Data May 2016**
1.	Sulphur Dioxide (SO_2)	mg/ m^3	120	10.2	7.3

2.	Oxides of Nitrogen (NO_2)	mg/ m^3	80	10.9	8.2
3.	Carbon Monoxide (CO)	mg/ m^3	5	0.16	0.44
4.	Particulate Matter (SPM)	µg/m^3	550	22.7	52.7

ANNEX-J

NOISE LEVEL OF THE RESPECTIVE LOCATION UNDER PACKAGE I

Average Noise Level at 24 hours Time Span

A. Average Limiting Value of Noise at Day Time Industrial Area – 80 dB-A- Leq
B. Average Limiting Value of Noise at Night Time Industrial Area – 75 dB-A- Leq
C. Average limiting Value of Noise at Residential Area – 55 dB-A- Leq

Sr. No	Parameters	Units	Locations	
			GIS Grid Station FSD	AIS Grid Station Shahbaz Khel
1	Humidity	%	81.3	79.16
2	Wind Speed	m/sec	12.2	14.7
3	Temperature	oC	18.99	13.54
4	Noise Level	dBA	48.16	47.8

ANNEX-K

NOISE LEVEL OF THE RESPECTIVE LOCATION UNDER PACKAGE III

A. Average Limiting Value of Noise at Day Time – 80 dB-A- Leq

B. Average Limiting Value of Noise at Night Time – 75 dB-A- Leq

Sr. No	Location	Unit of Noise Decibel on Scale A	Baseline Data October 2015 (Average)		Monitoring Data May 2016	
			Day Time	Night Time	Day Time	Night Time
1	66 KV Grid Station Kalabagh	dB-A- Leq	49	45.5	48.15	40.5
2	66 KV Grid Station Rakh Dagran	dB-A- Leq	45.5	42.5	51.45	45
3	66 KV Grid Station 18-Hazari	dB-A- Leq	48.5	44.5	51.5	40.9
4	66 KV Grid Station GM Raja	dB-A- Leq	46.7	43.2	48.25	39.35

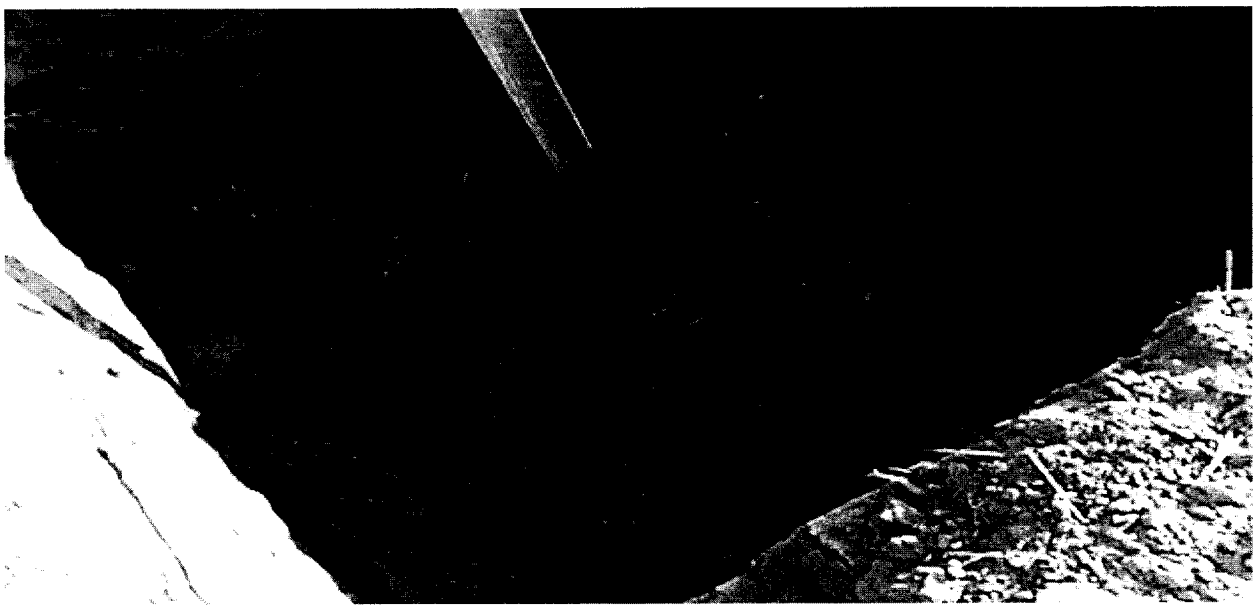
ANNEX-L

SOIL MONITORING OF LOCATIONS UNDER PACKAGE I

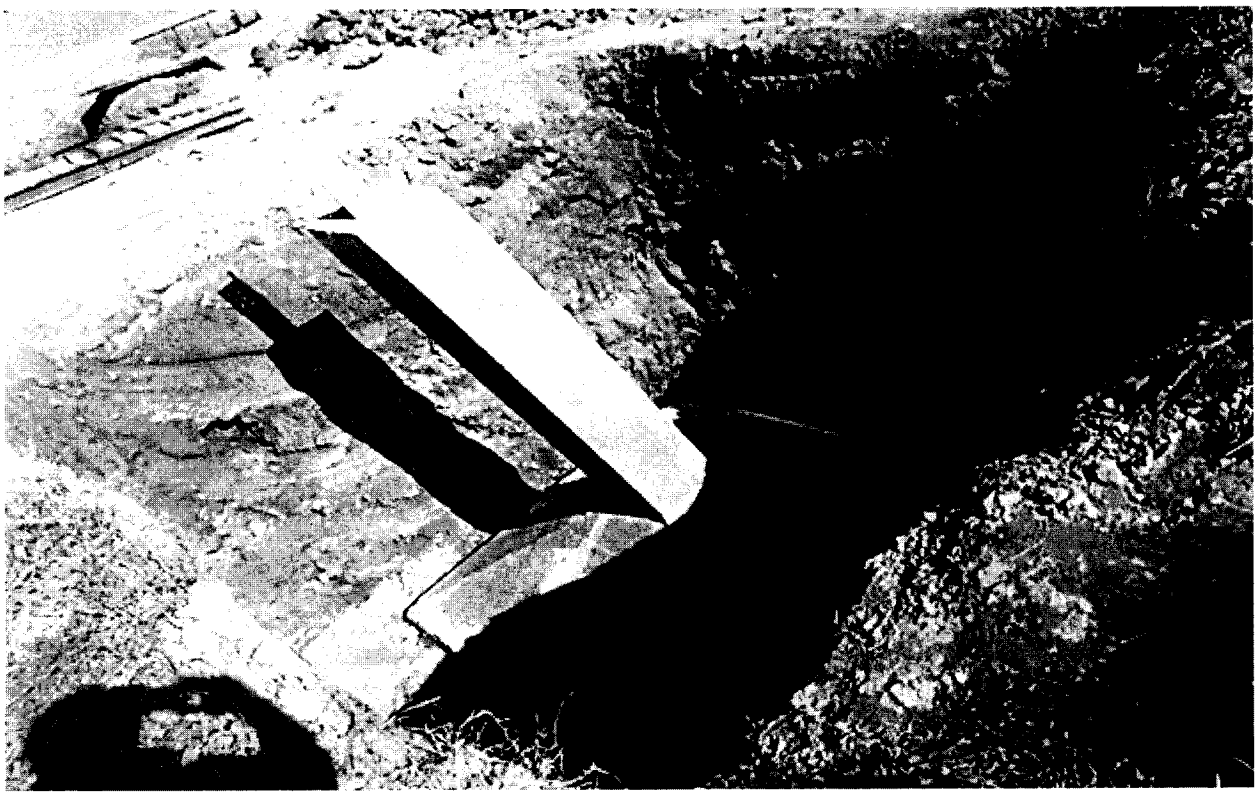
Sr. No	Parameters	Units	Results	
			GIS Faisalabad	AIS Shahbaz Khel
1	pH		7.84	9.91
2	Phosphorous	mg/kg	26.2	64.1
3	Sulphur	mg/kg	433	506
4	Chloride	mg/kg	141	709
5	Sodium	mg/kg	889	2053
6	Potassium	mg/kg	1208	4998
7	Calcium	mg/kg	198	345
8	Magnesium	mg/kg	326	225
9	Nickle	mg/kg	3.1	4.2
10	Copper	mg/kg	16.2	22.2
11	Manganese	mg/kg	9.0	14.1
12	Zinc	mg/kg	18.7	44.7
13	Selenium	mg/kg	0.02	0.01
14	Boron	mg/kg	2.4	2.4
15	Nitrogen	mg/kg	90	34

PICTORIAL VIEW OF THE PROJECT

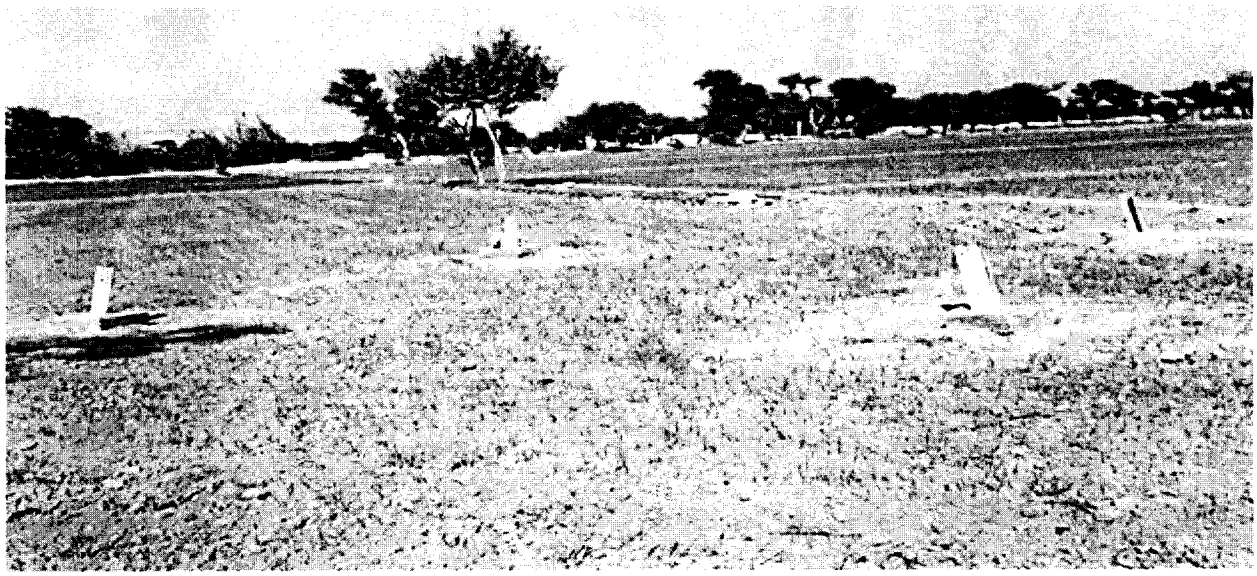
Resolving Community Issues on 18-Hazari to GM Raja Transmission Line



Stub Setting

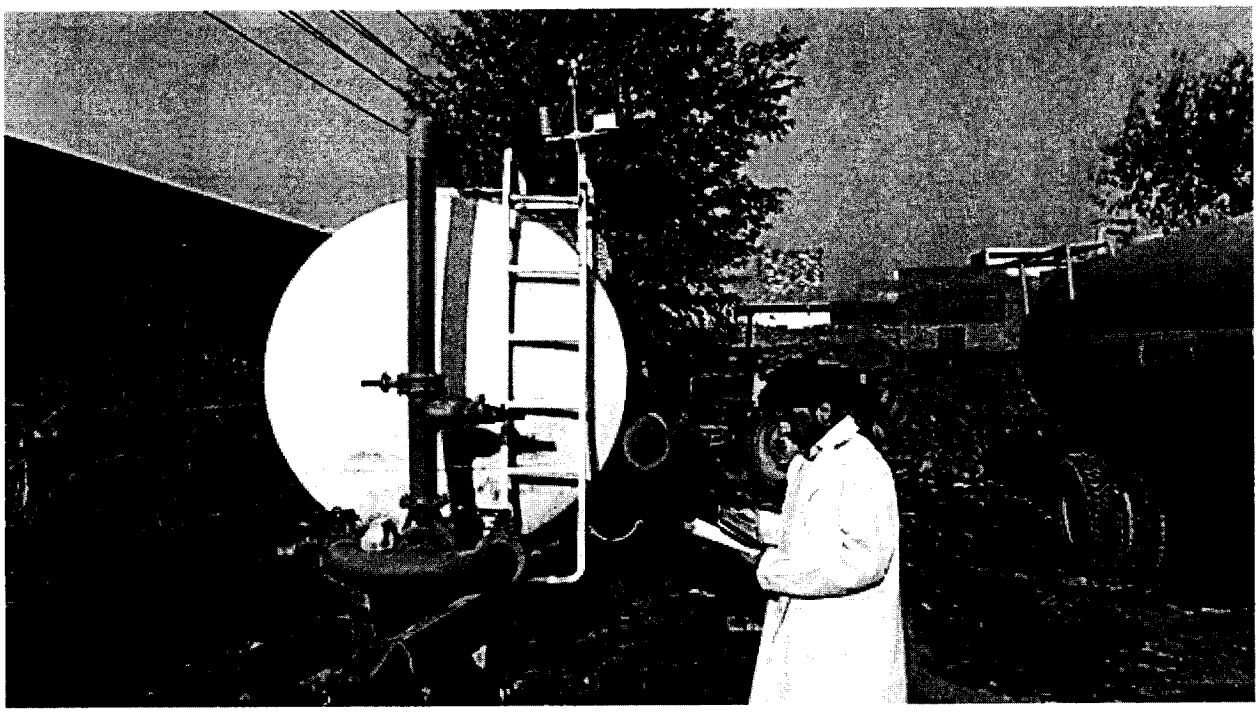


Concreting of Tower Foundation

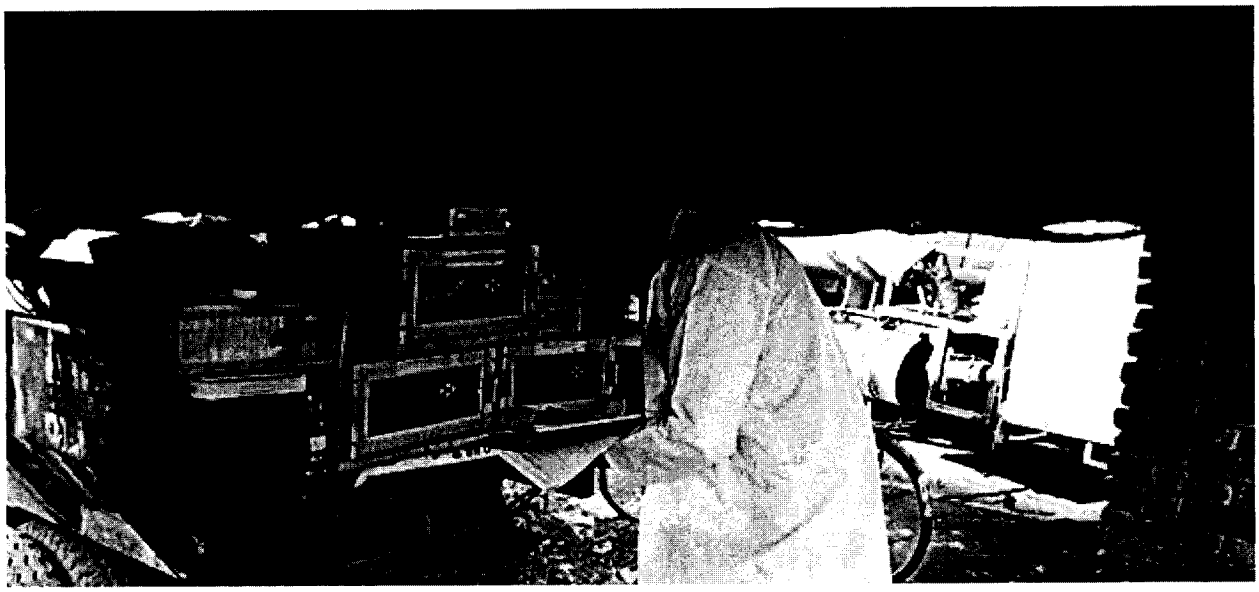


Restoration and backfilling of Tower Foundation Area

Particulate Measuring Device installed at GIS Grid Station Faisalabad

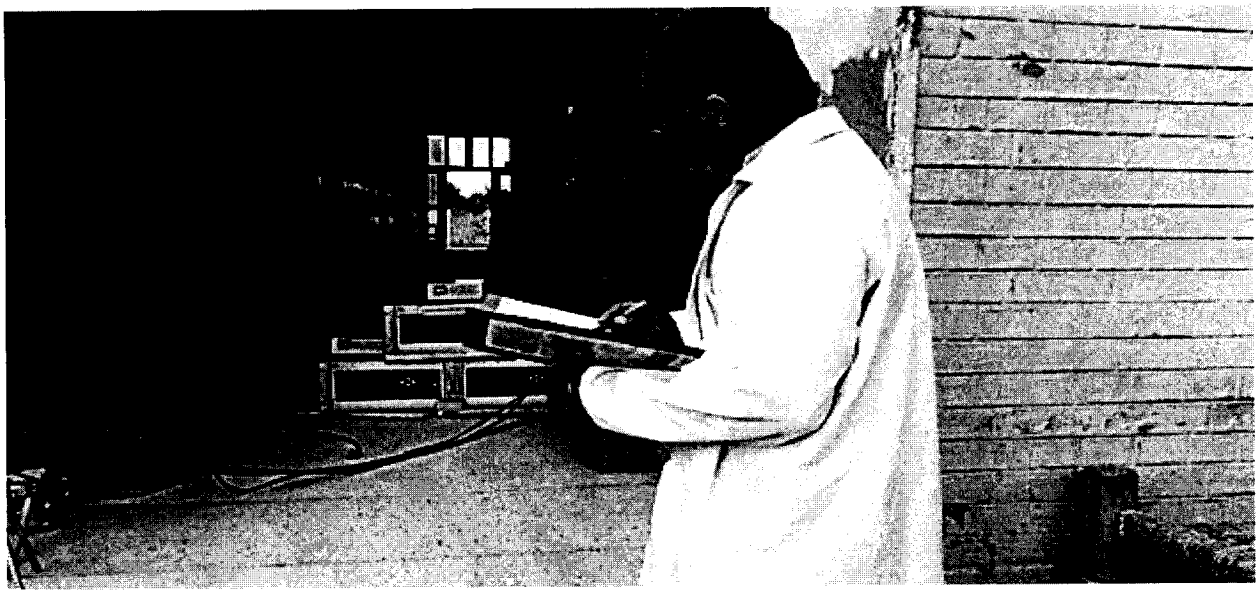


Climatology Station for measurement of Humidity, Temperature , Wind Speed& direction



Ambient Air Quality measurement at GIS Grid Station Faisalabad

Noise Measurement at AIS Grid Station Mianwali



Ambient Air measurement at AIS Grid Station Shahbaz Khel District Mianwali

On job training regarding use of safety gadgets