Ministry of Climate Change
Government of Pakistan

WWF®

SUSTAINABLE LAND MANAGEMENT PROJECT
COMBATING DESERTIFICATION IN PAKISTAN
SLMP

UNDP Pakistan

TRAINING ON SEQUESTRATION IN FOREST, RANGELANDS AND AGRICULTURE ECOSYSTEM IN PAKISTAN (19-21 JULY 2016, HOTEL REGENT PLAZA, KARACHI)

TRAINING REPORT 11 AUGUST 2016

CONDUCTED BY WWF-PAKISTAN FOR THE SLM PROGRAM

BACKGROUND AND INTRODUCTION

The Federal Ministry of Climate Change (MoCC) and UNDP are jointly implementing a one year project titled “Pakistan-National Action Programs (NAP) Alignment and Strengthening National Reporting Process” under the Sustainable Land Management Program to combat Desertification” from July 2015 to June 2016. The overall goal of the project is to enhance capacity to apply adaptive management tools in Sustainable Land Management”. The project has two major outputs:

Output 1: By June 2016, Pakistan has successfully aligned its NAP with UNCCD’s 10-Year Strategy;

Output 2: The Integrated Financial Strategy (IFS) developed providing sustainable and enhanced investments for SLM activities in Pakistan.

Under the output-2 and result 1.2 b, the project has planned to conduct trainings on carbon sequestration both at federal and provincial levels. This assignment of conducting trainings on carbon sequestration was assigned to WWF-Pakistan under the LOA signed on 02 May 2016. According to the LOA two trainings were planned i.e.

1. First training on 1-3 June 2016 at Islamabad for participants from federal organizations and from KPK, AJK and North Punjab
2. Second training on 19-21 July 2016 at Karachi for participants from Sindh, Balochistan and Southern Punjab.

This report is about the second training held on 19-21 July 2016 at Hotel Regent Plaza Karachi.

TRAINING TEAM

The training team consisted of the following resource persons:

1. Muhammad Ibrahim Khan, Senior Manager Conservation/ Forests and REDD+ Focal Person WWF-Pakistan:
2. Syed Amjad Hussain: Director, Drive for Economic and Environmental Development (DEED)/ CDM Expert, Islamabad;
3. Mohammad Qasim Khan: REDD+/ Carbon Stock Assessment Expert and Free Lance Consultant;
4. Anwar Ali: Carbon Allometry Expert, Pakistan Forest Institute Peshawar.

TRAINING OBJECTIVES

The objectives of the trainings are:

1. To sensitize the key stakeholders mostly consisting of government, non-government and civil society organizations, academia and relevant industries about the concepts and approaches of carbon sequestration in the context to CDM and REDD+ mechanisms;
2. To educate the participants about the evolution of CDM and REDD+ and necessary requirements for developing CDM and REDD+ projects under the international conventions such as UNFCCC;

3. To educate the participants about Monitoring, Measurement, Reporting and Verification for Carbon Sequestration Projects (REDD+);
4. To train the participants in assessing and developing CDM projects;

TRAINING PROGRAM

The overall training program is given as annex-1. The training sessions are elaborated as follows:

Day-1(19-7-16):

- Registration and opening session
- Introduction and training program
- CDM and REDD+ in the context of UNFCCC and UNCCD
- Status of CDM and REDD+ projects in Pakistan
- Carbon dynamics and potential of carbon sequestration in forest, rangelands and agricultural ecosystems;

Day-2 (02-6-16):

- Recap of Day-1 and Day-2 program
- Monitoring, Measurement, Reporting and Verification for Carbon Sequestration Projects (REDD+)
- Case studies on carbon stock assessment
- Concluding Day-2

Day-3 (03-6-16):

- Recap of day-2 and day-3 program
- Developing carbon sequestration projects
- Training evaluation and closing

PROCEEDINGS

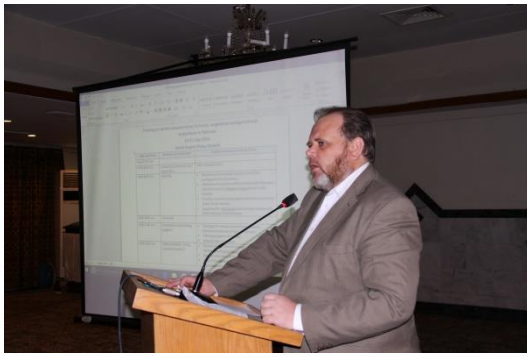
Day-1(01-06-16):

OPENING SESSION:

The training was started with the recitation from the Holy Quran by one of the participants. Mr. Muhammad Ibrahim Khan, Senior Manager Conservation and REDD+ Focal Person WWF-Pakistan welcomed the participants and explained the training objectives and program. According to Mr. Ibrahim the two trainings on carbon sequestration had been planned under the Pakistan-NAP Alignment Project of the SLM Program at Islamabad on 1-3 June and at Karachi on 19-21 July 2016. He also explained the three days program highlighting the topics and their objectives.

Mr. Nadeem Shaukat from SLMP UNDP gave detailed presentation about the Sustainable Land Management Program and the Pakistan-National Action Program Alignment Project. He explained the project objectives, outputs interventions and major achievements of the SLM Program (Presentation Attached as Annex-3).

Mr. Rabnawaz Senior Director Biodiversity thanked the participants for coming to the training and explained the WWF-Pakistan's objectives and work regarding forests conservation and REDD+. He hoped that the participants would learn about REDD+ and CDM during the three days training.



TECHNICAL SESSION- 1: CDM AND REDD+ IN THE CONTEXT OF UNFCCC AND UNCCD

Technical session-1 was started with the introduction of the participants and setting ground rules. The participants introduced themselves and explained their expectations from the training (List of participants is attached as Annex-2).

During this session following presentations were delivered:

Climate change; threats and opportunities for Pakistan by Syed Amjad Hussain:

This presentation was focused on two sub-topics; climate change as threat and climate change as an opportunity. He also gave an over view of the climate change adaptation and suggested a number of recommendations. His presentation covered the following discussion:

- **Climate Change as a threat:**

Climate Change (C.C.) is a global threat as it damages (or influences) the environment resulting in negative impacts on water resources, health, forests, coasts etc. Pakistan is on top of the list of the countries that are most vulnerable to C.C. Damage to GDP of Pakistan in the last decade due to C.C. was 6%. C.C. is mostly induced by anthropogenic factors– resulting in frequent melting of glaciers and eventually resulting in floods and heavy rainfalls destroying the resources and affecting the livelihoods of communities dependent on those resources. These threats may lead to major concerns in terms of energy security, food security and water security.

- **Climate Change Adaptations:**

The adaptation consists mainly of awareness about climate and the resulting issues, securities, alternates and more. It also consist of monitoring practices i.e. early warning systems, tracking of climate changes occurred, analysis of data collected and recommend appropriate solutions for the

identified issues and problems. The third category of climate change adaptation measures is development, which includes alternate livelihoods, suitable crops variety and better breeds of livestock, developing and strengthening the infrastructure and conservation of water and energy.

- **Climate Change as an opportunity:**

Climate change though a problem and a big challenge also presents opportunities for the poor and developing countries in terms of revenue and resource generation from the Clean Development Mechanism projects and other ecofriendly practices. Projects like renewable energy resources (such as solar, wind and biomass), waste management and afforestation and reforestation could be developed for the CDM.

- **Recommendations**:

In order to adapt to climate change as well as mitigate it there is need for capacity building, awareness raising on CDM, NAMA and GCF and development of more projects. It is recommended that each province make it mandatory to include a Performa for evaluating a project for CDM at its conception stage (Presentation attached as Annex-3).

Question Answers:

1. UMAIR NAZAR: The deforestation that takes place in those places where forest cover is low yet the communities are dependent upon those resources – what are the proposed solutions? As the melting of glaciers is related to cut down of forests.
   a. AMJAD HUSSAIN: Highlighting the issues and making the communities aware of the fact that deforestation will lead to more problems with initiation of CDM-able projects in such areas and communities. Afforestation practices recommended.
   b. TARIQ MEHMOOD: Vegetation near glaciers is low and limited. Moreover there are geographical barriers for further recovery of deforested area.

2. AIJAZ RASHEED: Can genetically modified seeds be used to regrow forests on high altitudes? Why is only Pakistan vulnerable to climate change? Pakistan is vulnerable to climate change. Does the same imply on neighboring countries of Pakistan such as India, China and Iran? And even if they are affected, what are they implementing?

a. COLLECTIVE RESPONSE: Genetically modified trees have not been cloned yet. Afforestation on high altitudes is a practice of going against nature. Countries such as India and China are themselves the producers of high Carbon emissions and thus make Pakistan vulnerable to C.C. Finances are available through various groups, organizations and stakeholders to initiate new projects. Awareness campaigns and more sustainable management are necessary in all projects. CDM initiatives should be practiced.

3. NADEEM MIRBAHAR: It was stated that the countries with high carbon emissions will pay the developing countries that are vulnerable to C.C. Is the amount that will be paid to the developing countries equivalent to the amount required to restore the damage that has been caused by the developed countries in the first place? Is the International Court of Justice taking any actions regarding this concern?

a. AMJAD HUSSAIN: It depends upon the percentage of GDP of the developing country that is invested on environment – Furthermore on international grounds, the Paris Conference drew the line by making the individuals / citizens of developed countries to pay taxes to their Governments and those countries will contribute by providing funds for the projects of the affected developing countries.

b. NADEEM MIRBAHAR: SLMP – UNDP Website should be developed where ideas, comments and suggestions can be made for improved projects and implementations.

4. SAIFULLAH: The forest department of Balochistan proposed various forest conservation schemes to the Government of Pakistan but none of the schemes got approved in this year's budget for the improvement and restoration of forests of Balochistan as forestry is the least of the priorities of the Government of this country.

CDM in the context of UNFCCC and Kyoto protocol; the concept, process and requirements by Syed Amjad Hussain:

This presentation consisted of climate change as an opportunity, concept of CDM, CDM Projects and CDM project cycle.

- **Climate Change as Opportunity:**

The Carbon Emissions that have led to global warming in the first place are due to human induced activities. To overcome the existing problems, United Nations have taken various actions like UNFCCC, Kyoto Protocol and the most current – clean development mechanism (CDM) that was initiated in 2005 and is now in its 2nd Commitment Period. These protocols and commitments have turned the carbon emission activities to rewarding activities hence benefiting humans by financing the ecofriendly ideas to lower the carbon emissions hence benefiting the environment as well.

- **Concept of Clean Development Mechanism:**

The idea is to set a limit of carbon emissions in form of carbon credits that work like certificates. The developed countries buy these credits in order to maintain their emissions. To maintain their emissions they use ecofriendly practices. In case a country is quite low on carbon emissions and does not require carbon credits, the said carbon credits can be sold to a country that is in need of more carbon credits.

- **CDM Projects:**

The idea of CDM Projects revolves around lowering the carbon emissions because of the restrictions of carbon credits. To lower the carbon emissions, a country has to work harder by introducing CDM Projects in the industries. For Example: by setting up a CDM Project in the Transport Sector of the country, emissions will become limited and will lower furthermore making carbon credits available for any other country to buy. This will generate direct revenue with furthermore benefits including increased employment level, GHG Reduction, Environmental Improvement with other co-benefits.

- **CDM Project Cycle:**

An idea is proposed in form of a project that is further screened to check the feasibility of the project. After submission to the local board of CDM, it is then submitted to the head office of CDM Projects. In the next step the project is formed and documented for practical implementation with the duration, finances and the impacts the project will generate. The project is further moved ahead for approval by the host country that follows certain legal procedures to make it valid. After submission of validation report, the project is reviewed again and is finally registered officially. Once registered, the project is then implemented and monitored. The process moves to annual reports of the projects with a possible review by the CDM board and enhanced and improved projects are submitted again for further environmental improvements (Presentation attached as Annex-3).

Question Answers:

Following questions were asked and answered at the end of the presentation:

1. **SAMIULLAH:** What is CDM Assessment?
    a. **SYED AMJAD HUSSAIN:** CDM Assessment is a protocol that should be followed to make the project more effective. It is the assessment procedure where all the hazards, problems, financial crisis, time management and more is analyzed to understand the outcomes of the projects in the proposed time period.

2. **AIJAZ and NADEEM MIRBAHAR:** Do the experts of Pakistan collect Data in fields properly before presenting a case or problem on international grounds? Because due to weak data analysis and no parameters followed, the PM of Pakistan was left with no data or a case study to present at the Paris Conference.
    b. **SYED AMJAD HUSSAIN**: Although the procedures are followed, the data is still in mismanaged form. The associated people should manage the data in usable form so that such similar cases don't happen in future.

REDD+ in the context of UNFCCC: the concept, process and requirements by Muhammad Ibrahim Khan:

This presentation covered the overall concept of REDD+ and its evolution and development over the last 10 to 15 years. The presentation included sub-topics like the scientific basis of REDD+, its political basis and its evolution from CDM to RED, REDD and then REDD+.

- **The Scientific Basis:**

REDD+ stands for reducing emissions from deforestation and forest degradation that revolves around the objective of controlling deforestation and forest degradation to combat climate change. Concentration of carbon dioxide has increased to a very considerable amount in the atmosphere of earth resulting in the phenomena of global warming. Deforestation is the major key that has resulted in elevation of CO_2 levels in the atmosphere. Moreover, the emissions of carbon due to industrialization in the developed countries have also put a negative impact globally.

- **The Political Basis:**

After recognizing the issue, UNFCCC was established to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. It works on global basis with signatory parties implementing the proposed ideas in their countries in collaboration with each other. The parties have been divided into developing and developed countries to understand the common grounds of each group. With this, certain ground rules have been set which all the parties have to follow.

- **The Evolution of REDD+:**

National level action plans, laws, projects and amendments have been proposed and implemented in various countries of the world to combat climate change. These have been made possible by certain practices that include forest conservation and management, afforestation practices, stopping degradation and enhancement of forest carbon stocks. All the strategies have taken place with involvement of Governments of various countries who are signatories of UNFCCC.

- **Warsaw Framework on REDD+:**

The framework has step by step set of guidance for participating countries to work towards conservation of forests in their countries. These steps include recognizing the deforestation and degradation activities and proposing a work plan or project to overcome these actions. The project is then assessed, monitored and verified. Furthermore it requires the involvement of stakeholders and government representatives with keeping the country's national policies for conservation of forests in mind. The project then goes through the technical phase which then follows other protocols such as timings, finance required and documentation of the project and it is then finally implemented (detailed presentation attached as Annex-3).

Question Answers:

At the end of the presentation following questions were asked by the participants:

7. What is the difference between deforestation and degradation?

- **IBRAHIM KHAN:**

Deforestation is the phenomenon in which the land of the forest is cleared completely and its land converted to another land use type such as agriculture. Hence it results in complete loss of trees and land and is a form of permanent damage. Degradation of forest on the other hand is the phenomenon where trees are cut, used or damaged in one form or the other which results in fewer canopies cover. This type of practice results in unhealthy and degraded forests.

TECHNICAL SESSION-2: STATUS OF CDM AND REDD+ PROJECTS IN PAKISTAN

This session was focused on the existing situation of REDD+ and CDM related projects in Pakistan. Following presentations were delivered during this session.

CDM potential and review of registered CDM projects in Pakistan by Syed Amjad Hussain

This presentation elaborated the CDM Potential and Review of Registered CDM Projects in Pakistan. Mr. Amjad explained the status of Greenhouse Gases Emission in Pakistan, fact and figures of registered CDM projects in forestry and agriculture globally as well as in Pakistan. Moreover he presented success stories of 7 CDM projects which started earning CERs in Pakistan. (Presentation attached as Annex-3).

A number of questions like how to start CDM Projects in Forestry sector, why Forestry sector projects are restricted to Afforestation and Reforestation only etc were asked by participants and all questions were answered by the trainer in detailed till the satisfaction of the trainees.

Question Answers:

Following questions were asked by the participants during the question answers session:

1. **RIZWAN AHMAD AND SAMIULLAH**: How to develop CDM Projects in forestry sector?
    a. **AMJAD HUSSAIN**: The CDM projects are conceived and registered at the project development stage through filling a prior consideration form and sent to the CDM secretariat. The CDM project once registered is placed on their website for CERs. Interested organizations and parties then pick the project for funding/ CER purchase. The details will be covered during the last day group exercises.
2. Why are forestry sector projects restricted to Afforestation and Reforestation only?
    a. **AMJAD HUSSAIN:** In forestry sector only afforestation and reforestation are qualified for the CDM.
    b. **IBRAHIM KHAN**: The CDM in forestry sector is now gradually taken over by the REDD+ which covers five eligible activities i.e. controlling deforestation, controlling forest degradation, enhancement of carbon stock, sustainable forest management and forest conservation.

TECHNICAL SESSION-3: CARBON DYNAMICS AND POTENTIAL OF CARBON SEQUESTRATION IN FOREST, RANGELANDS AND AGRICULTURAL ECOSYSTEMS

This session about carbon emission and sequestration cycle in forests, rangelands and agricultural ecosystems. The participants were educated how carbon is emitted from deforestation, forest degradation, agriculture and other land uses and how it's sequestered in these systems. Moreover they were sensitized about the importance of forests, rangelands and agricultural ecosystems from the climate change mitigation point of view. Following presentations were made during this session:

General overview of carbon dynamics in forest, rangelands and agricultural ecosystem by Muhammad Ibrahim Khan

The presentation consisted of sub-topics on carbon flows and carbon cycle in forests, rangelands and agriculture system; definition, categories and different ways and means of mitigation, and the complexity of Forest Mitigation (Presentation attached as Annex-3).

Question Answers:

Following questions were asked and answered at the end of the presentation;

1. **NADEEM MIBAHAR:** What is the difference between carbon flux and carbon sequestration?
    a. **IBRAHIM KHAN:** The carbon flux is the movement of carbon from one pool to another pool while the carbon sequestration is the movement of carbon from the atmospheric pool to other carbon pools, including soils and vegetation.

2. **NADEEM MIBAHAR:** How does carbon stock moves from forest to rangelands and vice versa?
    a. **IBRAHIM KHAN:** This carbon flux. When a forest is deforested and converted to rangelands part of the carbon stored in trees and forest vegetation is released into the atmosphere while part of it still remains in the grasses, soil and other pools.

Carbon stock in forest, agriculture and rangelands ecosystems by Mohammad Qasim Khan

The presentation was aimed at educating the participants about the five carbon pools i.e. Aboveground Biomass (trees and shrubs), Belowground Biomass (roots), Soil Organic Carbon, Deadwood (standing and lying) and litter. These five carbon pools are recognized by UNFCCC and are also accepted for the REDD+ programs. The significance of these pools was also highlighted. Different

methods for assessment of carbon stocks for all five pools were also introduced to the participants (Presentation attached as Annex-3).

Question & Answers:

The participants asked various questions, which included the following.

1. How is the carbon estimated in soil?
    a. **QASIM KHAN:** The soil samples are taken and then oven dried and tested in lab for soil organic carbon contents:
2. How is below ground biomass carbon estimated?
    a. **QASIM KHAN:** This involves destructive sampling as well can be estimated from already existing models and allometirc equations.

CLOSING DAY-1:

The first day was concluded by Mr. Muhammad Aslam Karim Khan by presenting an overview of the sessions and discussion.

Day-2 (02-06-16):

The second day was started with the recitation from the Holly Quran. Mr. Ibrahim Khan presented the first days recap and the second day program. He requested the participants to be punctual and attentive as the second day was the most important one.

TECHNICAL SESSION-4: MONITORING, MEASUREMENT, REPORTING AND VERIFICATION FOR CARBON SEQUESTRATION PROJECTS (REDD+)

Assessing and analyzing drivers of deforestation and forest by Muhammad Ibrahim Khan:

The presentation consisted of definition, concept and requirements for the assessment and analysis of the drivers of deforestation and forest degradation through presenting the Pakistan's specific case. The presentation consisted of the following topics:

1. Background and UNFCCC requirements on addressing drivers of deforestation and forest degradation
2. Definitions and overview of drivers
3. Different approaches for monitoring drivers of deforestation and forest degradation
4. Role of drivers in developing national forest reference (emission) levels and designing policy interventions
5. Pakistan's NFMS Action Plan (Presentation attached as Annex-3).

Questions & Answers

1. What is the difference between drivers and causes?
    a. **IBRAHIM KHAN:** Drivers are actually the root causes which result in the deforestation or degradation of forests.
2. What are the direct and indirect drivers?

a. **IBRAHIM KHAN:** Direct drivers are those factors which directly result in deforestation or degradation such as fuel wood collection and timber harvesting while indirect drivers are those which result in those factors which lead to deforestation or degradation for example population growth, rapid development etc.

National forest-monitoring system for REDD+ by Muhammad Ibrahim Khan:

The objective of this session was to educate the participants about the concept of MRV, the UNFCCC requirement and standards for MRV and the process to be adopted for establishing and operationalizing a MRV system. To make the participants to better understand the MRV system, Pakistan's and other country's examples were also presented. The topic covered in this presentation included UNFCCC requirements for national forest-monitoring (Presentation attached as Annex-3).

Questions & Answers

The participants asked the following questions at the end of the presentation, which were thoroughly answered:

1. What is the difference between NFMS and MRV?
    a. **IBRAHIM KHAN:** NFMS includes the overall monitoring of the forest resources which consists of other functions besides MRV while MRV being one of the functions of the NFMS consists of measurement, reporting and verification of the REDD+ activities.

Forest Reference Emission Level (FREL)/Forest Reference Level (FRL) in REDD+ by Mohammad Qasim Khan:

The participants were educated about the general background on REDD+ eligible activities. They were familiarized with four elements of REDD+. The concepts of FREL/FRL were clarified. The elements of FREL/FRL were also elaborated for the participants. Further, deep insight was provided on the modalities of FREL/FRL, submission of information on FREL/FRL by the submitting country, technical assessment of FREL/FRL of the submitting country by the UNFCCC and various approaches for the construction of FREL/FRL. At the end, a general work flow was shared with the participants which can be adopted for the construction of FREL/FRL by the developing countries (Presentation attached as Annex-3).

Questions & Answers

Following questions were asked and answered at the end of the presentation:

1. What is the difference between FREL and FRL?
2. **QASIM KHAN**: FRL and FREL are baselines. FRL is forest reference level which includes only carbon emission while FREL is the net emissions i.e. FREL = Emissions-Removals=Net emissions at a certain point of time.

TECHNICAL SESSION-5: CASE STUDIES ON CARBON STOCK ASSESSMENT

Carbon Stock Assessment in a sub-watershed of the Himalayan Forest (Ayubia National Park) by Mohammad Qasim Khan:

A case study on carbon stock assessment in a sub-watershed of the Himalayan Forest (Ayubia National Park) was shared with the participants. The participants were familiarized with the sampling approaches and methodologies adopted for carbon stock assessment of the two forest types in Pakistan; Moist Temperate Forest and Sub-tropical Chir Pine Forest. Methodologies adopted for each of the five carbon pools at these two forests were also shared with the participants. Participants were also enlightened about the process for finding out the number of sampling plots in case of various strata. Various correlations between different variables were also highlighted through this case study (Presentation attached as Annex-3).

Question & Answers:

The presentation was of more interest for the foresters and they asked various questions, which included the following.

1. Why statistical tests were performed?
    a. **QASIM KHAN:** Statistical tests were performed to determine significant differences between various variables.
2. What is the graph depicting in terms of the variable other than the two forest types?
    a. **QASIM KHAN:** the graph is showing the total for both forest types combined for the third variable.
3. What sampling methodology was adopted?
    a. **QASIM KHAN:** Random sampling methodology was used for the study.
4. What value for carbon in terms of Dollars per hectare was adopted?
    a. **QASIM KHAN:** Seven dollars per hectare was used for the calculations.
5. Does the monetary value of carbon remain static over the project's time period?
    a. **QASIM KHAN:** No. It is not necessary. The carbon value can fluctuate over project's life period.

Carbon stock assessment of the vegetation of Nazinga Game Ranch and Bontioli Nature Reserve, Burkina Faso, West Africa" by Mohammad Qasim Khan:

A case study on carbon stock assessment of the vegetation of Nazinga Game Ranch and Bontioli Nature Reserve in Burkina Faso, West Africa, was also shared with the participants. By means of this case study, the participants were familiarized with the sampling approaches and methodologies required for carrying out carbon stock assessment studies in various ecosystems. Various generic allometric equations were also shared with the participants, which could be used in such studies in case of absence of site specific or species specific allometric equations. Different relationships amongst

variables such as between Leaf Area Index (LAI) and carbon stocks were also highlighted through this case study (Presentation attached as Annex-3). .

Questions & Answers

Following questions were asked and discussion held regarding the case study:

1. What is leaf area index?
    a. **QASIM KHAN:** It is a dimensionless variable and is defined as one sided leaf area per unit ground area.
2. How leaf area index is measured?
    a. **QASIM KHAN:** Photographs are taken through fisheye lens, which are then analyzed through WinScanopy 2005ab.
3. What has caused variation for gallery forests in Kernel Density Plot?
    a. **QASIM KHAN:** The values for diameter at breast height for gallery forests were higher than the other vegetation types.
4. What is the relationship between leaf area index and canopy openness?
    a. **QASIM KHAN:** They have an inverse relationship, increase in one follows with decrease in the other.
5. Why weak relationship was shown between mean leaf area index and mean carbon?
    a. **QASIM KHAN:** It depends; there could be numerous factors involved. More detailed studies would be needed to explore these factors.
6. What effect the sunlight has on fisheye lens?
    a. **QASIM KHAN:** It causes error in leaf area index estimation.

Case study on carbon stock assessment in KP by Pakistan Forest Institute by Anwar Ali:

Mr. Anwar Ali presented the work carried out by PFI regarding carbon stock assessment in Khyber Pakhtunkhwa Province. He presented the overall aim and objectives and achievements of the project. He also elaborated the methodology adopted. His presentation mainly covered:

1. Quantifying of carbon stocks in various pools of forest ecosystems including biomass and soil carbon,
2. Determining carbon sequestration rates and potentials of different forest types in Khyber Pakhtunkhwa,
3. Quantifying carbon emissions from deforestation and degradation of forests and establishing a sub-national Reference Emissions Level for KP
4. Preparing biomass/carbon base maps for different forest areas
5. Preparing biomass/carbon tables for major tree species of the province

(Presentation attached as Annex-3).

Questions & Answers

1. Is the data available on net?
    a. **ANWAR ALI:** The data is not available as we are going to publish the articles in scientific journals. The articles have been accepted for publication and will soon be available.
2. How many species have you covered so far?
    a. **ANWAR ALI:** We have covered five species i.e. deodar, Kail, Fir, Spruce and Quercus.

The second day was concluded by Mr. Ibrahim Khan.

Day-3(03-06-16):

TECHNICAL SESSION-6: DEVELOPING CARBON SEQUESTRATION PROJECTS

This session consisted of two presentations on CDM methodologies for data reporting and CDM projects assessment and group work on developing CDM Afforestation and Reforestation Projects.

CDM methodologies for data reporting of afforestation and reforestation projects by Syed Amjad Hussain

Syed Amjad Hussain delivered presentation on "CDM Assessment for Carbon Sequestration Projects". He explained how to assess any forestry traditional project under A/R CDM project to make it eligible for carbon credits. He elaborated the three steps for CDM assessment of public or private sector projects i.e. review of GHGs emission reduction potential of a project, review CDM methodologies and registration of the CDM Projects with the UNFCCC. He explained that based on those steps the applicant would fill in the CDM Potential Assessment Form to complete the assessment process. He also explained all the sections of the Prior Consideration for CDM.

Question and answers:

A number of questions were asked and answered which include the following:

1. Why is CDM assessment necessary at planning stage?
    a. **SYED AMJAD HUSSIAN:** This is needed at planning stage because this is the basic requirement of the UNFCCC?
2. When should we prepare PCF and to whom should we submit?
    a. **SYED AMJAD HUSSIAN:** This is needed at the planning stage of the project and should first be submitted to the DNA and then the UNFCCC. All the steps will be elaborated during the group work.

Group work on filling of prior consideration forms for CDM projects

The participants were divided into following two groups:

Group- 1: on "Carbon Sequestration through Mass Scale Linear Plantation along roadside in Sindh, Pakistan"

Group-2 on "Installation of Solar tube wells to replace fossil fuel by cleaner energy in agriculture sector in Sindh province, Pakistan"

Both the groups worked on CDM assessment and development of Prior Consideration Forms of CDM for Forestry and Agriculture sectors. The participants were guided on how to assess their respective projects by using CDM Assessment forms adopting CDM methodologies available on UNFCCC website and register their CDM projects. Both the groups presented their CDM assessment and PCFs and were discussed in plenary. As a result of discussion the PCFs were further refined including their titles and objectives.

Following outcomes were achieved as a result of the presentation and group work:

- Improved capacity for CDM project assessment, identification and implementation in Green sectors
- Participants are able to assess their Forestry and Agricultural Sectors projects CDM eligibility without external support
- Participants are able to prepare prior consideration of CDM for their Projects to make these project eligible for claiming carbon credits without external support at Planning stage or before commissioning
- Two PCF of the existing projects were developed i.e. Carbon Sequestration through Mass Scale Linear Plantation along the Road side in Sindh, Pakistan and Installation of Solar tube wells to replace heavy fuel oil based to cleaner source of electricity for agriculture sector in Sindh province.

(Presentation attached as Annex-3).

CERTIFICATES DISTRIBUTION AND CLOSING

Mr. Riaz Ahmad Wagan Conservator Forest Sindh Forest Department attended the closing session as a chief guest. From WWF-Pakistan's side Mr. Ali Dehlavi Senior Manager WWF-Pakistan Karachi also attended the closing session. Certificates were awarded by Mr. Riaz Wagan, Mr. Muhammad Ibrahim Khan and Mr. Ali Dehlavi.

Muhammad Ibrahim Khan, lead trained and resource person briefed the guests on proceedings of the three days training. Moreover he informed the chief guest about the practical use of the skills gained by the participants in the form of developing various CDM projects.

Mr. Umair Nazar from SLMP/ UNDP appraised the guests about the current interventions and future plans of his program. Among the participants Mr. Maqsood Ahmad Memon DFO Sindh Forest Department, Mr. Rizwan DFO Punjab Forest Department, Mr. Muhammad Aijaz Rasheed Assistant Professor IOBM and Mr. Abdul Qadir DFO Baluchistan Forest Department spoke about their learning and experience during the three days training.

Mr. Riaz Ahmad Wagan chief guest spoke about the need of the CDM and REDD+ at the wake of the emerging challenges of climate change. He thanked UNDP, SLMP, MoCC and WWF-Pakistan for organizing the training.

In the end Mr. Ali Dehlavi thanked all the participants, trainers and organizers for organizing the training successfully.

RECOMMENDATIONS

1. Keeping in view the different levels of knowledge about CDM and REDD+, the content of the presentations need to be made simpler i.e. for beginners.
2. Country examples and case studies proved to be the most attractive and understandable for the participants. More case studies and country examples should be added;
3. It would be more beneficial if the participants are taken to a CDM project;
4. Two trainings seem insufficient. The SLMP should plan a series of these types of trainings. Moreover the SLMP should help the relevant stakeholders and communities to develop at least one CDM project in forestry, agriculture and rangelands management.

ANNEXES

Annex-1: Training program

Training on carbon sequestration in forest, rangelands and agricultural ecosystems in Pakistan
19-21 July 2016
Hotel Regent Plaza, Karachi

Date and time	Session and moderator	Topics, resource person and time
Day-1: 01-6-16		
0900-0930 hrs.	Arrival of participants and registration	WWF-Pakistan team
0930-1030 hrs.	Opening	• Recitation from the Holly Quran (One of the participants): 05.00 minutes • Training objectives and program (Muhammad Ibrahim Khan): 15.00 minutes • Welcome and overview of the Pakistan NAP Alignment and SLM Projects (Nadeem SLMP: 15.00 minutes • Speech by Mr. Rabnawaz Senior Director Biodiversity WWF-Pakistan: 10.00 Minutes

1030-1100 hrs.	Tea break	
1100-1130 hrs.	Introduction and training program	• Participants' introduction and expectations (Muhammad Ibrahim Khan): 15 minutes • Training program: 10 minutes • Ground rules : 5 minutes
1130-1330 hrs.	CDM and REDD+ in the context of UNFCCC	• Climate change ; threats and opportunities for Pakistan (Syed Amjad Hussain): 30 minutes • Question Answers: 10 minutes • CDM in the context of UNFCCC; the concept, process and requirements (Syed Amjad Hussain): 30 minutes • Question Answers: 10 minutes • REDD+ in the context of UNFCCC: the concept, process and requirements (Muhammad Ibrahim Khan): 30 minutes • Question Answers: 10 minutes
1330-1430 hrs.	Lunch and prayer break	
1430-1530 hrs.	Status of CDM and REDD+ projects in Pakistan	• CDM potential and review of registered CDM projects in Pakistan (Syed Amjad Hussain): 20 Minutes • Question Answers: 10 minutes • REDD+ Preparatory phase in Pakistan (Muhammad Ibrahim Khan): 20 minutes • Question Answers: 10 minutes
1530-1545 hrs.	Tea break	
1545-1645 hrs.	Carbon dynamics and potential of carbon sequestration in forest, rangelands and agricultural ecosystems;	• General overview of carbon dynamics in forest, rangelands and agricultural ecosystem (Muhammad Ibrahim Khan): 20 minutes • Question Answers: 10 minutes • Carbon stock in forest, agriculture and rangelands ecosystems (Muhammad Qasim Khan): 20 minutes • Question Answers: 10 minutes
1645-1700 hrs.	Closing Day-1	• Concluding remarks by a senior participant
Day-2: (02-6-16)		
0900-0930 hrs.	Recap of Day-1 and Day-2 program	
0930-1050 hrs.	Monitoring, Measurement, Reporting and Verification for Carbon Sequestration Projects (REDD+)----	• Framework for developing national forest-monitoring systems for REDD+ (Muhammad Ibrahim Khan): 30 minutes • Question Answers: 10 minutes • Assessing and analyzing drivers of deforestation and forest degradation (Muhammad Ibrahim Khan): 30 minutes • Question Answers: 10 minutes
1050-1100 hrs.	Tea break	

1100-1300 hrs.	Monitoring, Measurement, Reporting and Verification for Carbon Sequestration Projects (REDD+)	• Developing Forest Reference Levels for REDD+ (Mohammad Qasim Khan): 30 minutes • Question Answers: 15 minutes • Estimating carbon emissions (Muhammad Ibrahim Khan): 30 minutes • Question Answers: 15 minutes
1300-1400 hrs.	Lunch and prayer break	
1400-1530 hrs.	Case studies on carbon stock assessment ----	• A case study in Moist Temperate Forests (Ayubia National Park) (Muhammad Qasim Khan): 30 minutes • Question Answers: 15 minutes; • Case study on carbon stock assessment in KP by Pakistan Forest Institute: (Anwar Ali, PFI): 30 Minutes • Question Answers: 15 minutes •
1530-1545 hrs.	Tea break	
1545-1630 hrs.	Case studies on carbon stock assessment	• A case study in Savanas of West Africa, Nazinga Game Ranch and Bontioli Nature Reserve, Burkina Faso (Muhammad Qasim Khan): 30 minutes • Question Answers: 15 minutes;
1630-1700 hrs.	Concluding Day-2	• Concluding remarks by a senior participant
Day-3 (03-6-16)		
0900-0915 hrs.	Recap of day-2 and day-3 program	Muhammad Ibrahim Khan
0915-1000 hrs.	Developing carbon sequestration projects	• CDM assessment for carbon sequestration projects (Syed Amjad Hussain); 30 minutes • Question Answers: 15 minutes;
1000-1015 hrs.	Tea break	
1015-1200 hrs.	Developing carbon sequestration projects (Group work)	• Group work on development of carbon sequestration projects (Participants): 60 minutes • Group presentations and discussion (Participants): 30
1145-1300 hrs.	Training evaluation and closing	• Training evaluation by participants: 10 minutes • Certificates distribution: 15 minutes • Closing remarks by the chief guest: (10 minutes) • Vote of thanks: (10 minutes)
1230----	Lunch and prayers---	

Annext-2: List of participants (attached as separate file)

Annex-3: Presentations (attached as separate file)