

University's Climate Action plan, shared with local government and local community groups

1. National workshop on , “Air Pollution and Smog- From Science to Solution”

The Department of Environmental Sciences, University of Veterinary and Animal Sciences (UVAS), Lahore arranged a national workshop on “Air Pollution and Smog: From Science to Solution” on Wednesday November 8, 2017. Punjab Minister for Environment Protection Mrs. Zakia Shahnawaz Khan presided over the inaugural session of the workshop while the worthy Vice-Chancellor Meritorious Prof. Dr. Talat Naseer Pasha S.I., Chief Meteorologist Flood Forecasting Division Lahore Muhammad Riaz, Dean Faculty of Biosciences Prof. Dr. Habib-ur-Rehman, Chairman Department of Environmental Sciences Dr. Saif-ur-Rehman Kashif and a number of students, researchers, environmental experts and faculty members attended the workshop.

Following speakers presented in the workshop:

1. Mr. Muhammad Riaz, Chief Meteorologist, Meteorology Department, Govt. of Pakistan, Lahore.
2. Mr. Zia ul Islam, Country Manager Ozone Cell, Ministry of Climate Change, Islamabad.
3. Prof. Dr. M. Faheem Khokhar, Head of Department, Institute of Environmental Sciences and Engineering, National University of Science & Technology, Islamabad.
4. Mr. Nasim ur Rehman, Director, Environment Protection Department, Govt. of Punjab, Lahore.
5. Mr. Ahmad Rafay Alam, Env. Lawyer, Lahore
6. Mr. Aleem Butt, Chief Environmentalist, Solution Environmental & Analytical Laboratory (SEAL), Lahore
7. Dr. Saamia Saif, Environmental Consultancies and Options (ECO) Cavalry Ground, Lahore.
8. Miss Nadia Ayub, representative of World bank / and Lahore Chamber of Commerce and Industry, Lahore.







Workshop Recommendations

Short Term Recommendations:

- A very high amount of pollutants are being emitted by vehicles, due to low maintenance, high traffic and slow movement on rushy areas, and lack of monitoring of exhaust gases of different vehicles by concerned departments. It is suggested that catalytic converters to be installed in all local vehicles and should be inspected on regular basis by concerned departments..
- The two stroke vehicles generate very high levels of pollution on roads and there should be a plan for the substitution of two stroke vehicles by 4 stroke vehicles. Although law is present but mostly 2 stroke vehicles are present on roads especially in peri-urban Lahore.
- There should be regulations for Motor Cycle Rickshaws to limit total number of passengers to 5 persons including driver as overloaded vehicles contribute to more air pollution. There should be policy by Govt. to substitute Motor Cycle Rikshas to avoid smog formation in coming years.

- Fuels like petrol and diesel need to be monitored for their constituents especially lead (Pb) and sulfur (S) contents by concerned authorities.
- Titanium oxide coated tiles need to be placed on roofs and foot paths to adsorb pollutants from air.
- Recycling sector especially pyrolysis industry uses tyre scraps for the production of oil to be mixed with diesel. This pyrolysis produced oil has high sulfur contents, when mixed with diesel emits high levels of sulphur dioxide into air after combustion. Therefore, import of tyre scraps for pyrolysis needs to be regulated.
- Commercial air filters working on solar energy need to be installed on main roads to clean pollutants and dust from air.
- Air Quality Monitoring System should be initiated and Air Quality Index (AQI) should be telecasted regularly on FM channels as well as be displayed on main roads for prevailing AQI of the area through digital boards.
- The burning of trash having plastics in smelters should be regulated and minimized.
- Industries should install scrubbers to prevent air pollution. Factory license should be cancelled after a grace period in case of non-compliance by concerned authorities.
- There should be water sprinkling on roads especially before winter to reduce respirable dust particles (PM 2.5). Contractors engaged on Metro Train Project need to be motivated for water sprinkling daily on project site to reduce dust particles.
- Pollution eating plants like Areca Palm, Mother-in-Law's Tongue, The Money Plant, Petunia plants and others also need to be planted in homes, offices and road sides which may clean air naturally.
- As there is much contribution of smog due to trans-boundary fires, issue need to be addressed with transboundary government to stop/minimize fires to trash before onset of winters.
- Smog policy which has been prepared by Punjab Govt. without consulting all stake holders like Academia/NGOs/Industrial partners, need to be discussed with all stake holders before implementation to get maximum output for controlling smog/air pollution in Lahore.

Long Term Recommendations

- It should be mandatory for industries to convert on renewable energy for 10 % of their electricity use every year.
- Fossil fuel vehicles need to be converted into electric vehicles. Govt. should promote electric vehicles by providing reduction on import duties on such vehicles. Moreover, small hybrid vehicles should be promoted and larger vehicles may be discouraged by imposing heavy import duties.
- There should be promotion of vertical expansion rather than lateral expansion of buildings, to avoid deforestation and new housing schemes in peri-urban areas. There should be land use policy by Govt. agencies especially in Metropolitan areas.
- Forestation should be increased and there should be a check on deforestation.
- Plantation of all main roads including Canal Road and Band Road should be promoted. If plant removal is mandatory, then existing plant should be shifted to suitable place using latest technology without cutting it down.
- There should be carbon penalty on all vehicles and industries and collected fund will only be utilized for improving air quality in the city.
- Environment Protection Department should collaborate with Higher Education Institutes like universities for their R&D and provide small grants for their pollution study projects through postgraduate students related to Environmental departments.

Department of Environmental Sciences, University of Veterinary and Animal Sciences (UVAS) is fully equipped with equipment's needed for monitoring of different pollutants from vehicles, industries, generators (LANDCOM-III) and for monitoring ambient air quality of different parts of Lahore (HIM-6000 Haz Scanner). This university is ready to share its data, equipment's and expertise with concerned departments if needed. UVAS is also ready to provide training to staff of concerned departments for measurement of different pollutants in air to avoid smog in coming years.

2. RESOURCE & TRAINING CENTRE ON BIOGAS

Presently, this department provide resource and training facilities to students, farmers and community especially in remote areas to fulfill energy requirements from alternate energy sources especially from Biogas from animal dung/different organic wastes. A biogas training unit is established at B-Block Ravi Campus at Pattoki, which is 25 m³ size and can provide biogas sufficient to run 30 HP Peter engine for 4-7 hours using hybrid fuel (30% Diesel and 70 % Biogas). In addition to biogas for tube well operations, slurry which is finely decomposed can directly be used as an organic fertilizer to reduce use of inorganic fertilizers so to reduce foreign exchange on fertilizer imports.



A training manual on Biogas plant installation and operation is also in the process to be published.

Biogas from Animal Dung

(Training Manual)



Dr. Saif-Ur-Rehman Kashif is

Dr. Samiullah Bhatti is

**BIOGAS TRAINING & RESOURCE CENTRE**
UNIVERSITY OF VETERINARY & ANIMAL SCIENCES LAHORE

3. Member Biogas Committee

Dr. Saif-Ur-Rehman Kashif is serving as member Biogas Committee, Govt. of Punjab.


4. Technical Member on Environmental Impact Assessment (EIA)

Dr. Saif-Ur-Rehman Kashif is working as a technical member on Environmental Impact Assessment (EIA) Committee in Environmental Protection Department, Govt. of the Punjab.


5. Policy Brief

Policy Brief on Indigenous fodder trees to boost livestock economy and tackle climate hazards

POLICY BRIEF



November, 2018



A goat herders in Potohar pruning Acasia Modesta pods during dry autumn

INDIGENOUS FODDER TREES TO BOOST LIVESTOCK ECONOMY AND TACKLE CLIMATE HAZARDS

Policy Message

Indigenous fodder trees (IFT) can

- Save starving livestock during climate hazards
- Contribute to livestock feed during scarcity periods
- Harness herders as stewards of trees rather than blamed eradicators
- Reduce methane emission from rumination due to higher tannin contents
- Rehabilitate degraded hill slopes, control soil erosion and reduce flash floods
- Sequester carbon, and helps in improving land/spur stabilization in riparian areas
- Helps reducing the Humans and livestock competition for food and feed resources.

Herders are mostly blamed for preventing regeneration of trees and degradation of hill slopes, rangelands and riparian areas due to overgrazing. It may be partly true in some situations, however, not for fodder trees and shrubs, for which they always work to thrive, as a necessity for survival during scarcity seasons and drought disasters. During floods, when the crops are submerged, tree foliage help to rescue feed the threatened livestock. They also contribute to reduced competition of land for food and feed. As the changing climate will increase the intensity of floods and drought, the hence increase the need for fodder tree plantation for survival of smallholder herders. This policy brief has thus tried to highlight the fact that herders' perspectives can be used to improve the food security and climate resilience through IFTs.

Herders: The custodians of grazing lands and fodder trees

Fodder trees and shrubs help herds to pass through the scarcity periods due to their deep rooting system and hence better tolerance to drought and floods. Fodder trees can be promoted in partnership with custodian herders in these areas, and can then better be acknowledged as the stewards of forested areas. In Pakistan, so far no precise data on mobility pattern, annual dynamics and economic contribution of these herding communities is available due to neglect and marginality. These herders draw on their backlog of observations and experience to manage trees and shrubs to their benefit. They know how to play upon plant complementarities as they choose the pastures on which to graze their flocks, taking advantage of ecosystems with diversified forage and foliage availability. They are the ones whose economic benefit is stringently attached with standing trees for shade and feed.

Link to the Brief: https://www.weadapt.org/system/files_force/policy_brief.pdf?download=1

6. A project entitled “Solar assisted biogas production from kitchen waste

A project entitled “Solar assisted biogas production from kitchen waste” funded by cleaner production center, Islamabad with total funding of 0.2 million PKR is in progress in the department of Environmental sciences. (PI Dr. Saif Ur Rehman Kashif)

7. Knowledge transfer on solar energy

Department is engaged in knowledge transfer pertaining to renewable energy resources (solar energy) at university level (Resource person: Dr. Saif Ur Rehman Kashif)

8. Training workshop on Solar energy

A training workshop to give hand on exposure about solar energy to outgoing semester-8

Participation in co-operative planning for climate change disasters, working with government

1. International Day for Disaster Reduction





2. Awareness walk & Seminar on International Day for Natural Disaster Reduction on 12th of October 2017





Support to local or regional government in local climate change disaster or risk early warning and monitoring

1. Support to EPD

Support to Environmental Protection Department (EPD), govt. of the Punjab by monitoring of air pollutants and providing data to the EPD during smog periods in Lahore.

2. Tree Plantation in Gulab Devi Hospital

Tree Plantation and awareness walk was organized by the department of Environmental sciences in collaboration with Punjab forest department in the Gulab Devi Hospital, Lahore in April, 2018





3. Plant for Tomorrow Campaign

A plantation campaign "Plant for tomorrow" along the Lahore canal was organized by the department.





4. A Monograph

A Monograph published by Dr. Muhammad Luqman provides details about how climate change and pollution is threatening biodiversity of marine diatoms. Dr. Luqman presented data about various pollution indicator diatom species emerging in polluted waters of Pakistan and are an early warning bio-indicators for deteriorating marine health.

Diatoms are microscopic, unicellular algal cells from Class Bacillariophyceae, which are the base of marine primary production. They are highly sensitive and quickly respond to subtle environmental changes. Marine pollution is decreasing the biodiversity of diatom communities in Pakistan waters and threatening ocean productivity. There are about 42 genera of diatoms in coastal waters of Karachi, Pakistan. The biodiversity is high in relatively open and cleaner coastal waters compared to polluted backwaters. Recurrent blooms of *Nitzschia closterium* and *Synedra acus* are observed for the first time in Karachi coastal waters in Northern Arabia Sea. These blooms are co-related with the prevailing environmental conditions like salinity, temperature, rainfall, and allied factors. The blooms suppress the existence of other diatoms and have shown an enormous impact on the biodiversity of diatoms communities along Karachi coast. The diatom species which were regularly reported in backwaters of Karachi in 1972-73 are rarely observed now. Diatoms like *Bacillaria*, *Bacteriastrum*, *Chimacospaenia*, *Coconies*, *Diploneis*, and *Hemidiscus* are confined to polluted locations and are pollution-indicators.



Muhammad Luqman

Marine Diatoms of Pakistan

Biodiversity Under Threat
Published in Dec 2019



Dr. Muhammad Luqman is serving as an Assistant Professor in the Department of Environmental Sciences, University of Veterinary and Animal Sciences (UVAS), Lahore, Pakistan. Dr. Luqman is involved in studies of marine diatoms and has reported novel blooms of pollution-indicator species from Northern Arabia Sea along Karachi coast.



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5. A projects addressing the forecasting of smog

A projects addressing the forecasting of smog in Lahore-Gujranwala-Faisalabad triangle in connection to seasonal and climate changes (Submitted by Dr. Syed Aziz Ur Rehman)