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EDITORIAL 01

- Environmental Degradation and Climate Change in Pakistan – Iftikhar Ul Haq 01

Important Events:

- Welcome Address of President Pakistan Engineering Congress on World Water Day 2021 05
- Glimpses of World Water Day 2021, held on March 27, 2021 on the Theme of "Valuing Water" 07
- Minister for multi-pronged approach to tackle water issues 19
- Smog Awareness Campaign 20
- Gypsum Deposits of Punjab Resource Potential: Challenges and Export Opportunities 22
- Rs. 936 million Contract awarded for Civil Works of 2nd Rehabilitation Project of Warsak Hydel Power Station 24
- Brief of Amri Wheat Bed Planter 26
- 900MW Ring Based Combined Cycle Power Plant Bin Qasim Power Station Phase III at Karachi 29
- 1263MW Ring Based Combined Cycle Power Plant at Jhang 31

Important News:

- New lake threatens villagers, farmland 33
- Charging infrastructure key to fast adoption of electric vehicles 35
- Govt to take loan in RMB, dollar for ML-I 38
- Electricity Policy 2021: Govt to decentralise power sector 41
- Wapda to add 9,000MW to grid by 2028 44
- Sindh Wapda Spar over Rs. 125 bn Barrage on Indus 46
- Govt to privatise 44 entities by 2025 48
- Govt to borrow Rs.4.82tr till May 51
- Urban Forestation 53
- Work on Mohmand Dam in top gear despite pandemic hiccups 55
- Guddu, Nandipur Plants may be given to PSO 57
- Experts stress need for green energy 59
- Importance of Rainwater Harvesting in Punjab's Barani Tract 61
- Covid accelerates edtech boom in Pakistan 64
- Roshan digital accounts attract historic $1bn 66

- Pakistan's REER index hits equilibrium 68
- Exploring world's biggest market 70
- Energy security: some suggestions 73

Technical Papers:

- Artificial Intelligence in Neural Network Programming and Learning – Abdul Mussawar Waqar 77
- Development of Innovative Rotation Plan Analysis Tool for Effective Monitoring of Hakra Canal System, South Punjab-Pakistan – Dr. Muhammad Riaz, Muhammad Kamran, Wasif Yousaf 81
- Groundwater-Food Security-Climate Change Nexus in Punjab, Pakistan – Ghulam Zakir-Hassan, Ghulam Shabir and Faiz Raza Hassan 91
- Telemedicine in Pakistan: A tool for a progress towards rural health care delivery – A Qualitative Study using thematic analysis – Engr. Dr. Muhammad Nawaz Iqbal 105
- Economic Impact of Trash Rack Efficiency on Canal Based Low Head Hydropower Projects – Dr. Engr Mazhar Hussain 115
- Good Governance Strategy for better valuing of water in the context of Climate Change Scenario of Pakistan – Prof. Dr. Abdullah Yasar, Hira Nissar, Rameesha Tanveer, Prof. Dr. A. B. Tabinda 127

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Pakistan Engineering Congress is a prestigious professional body established in 1912 dedicated, *inter-alia* to technical advancement of Science & Engineering in the country

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PROFILE OF PRESIDENT
ENGR. AMJAD SAEED (CIVIL/7990)

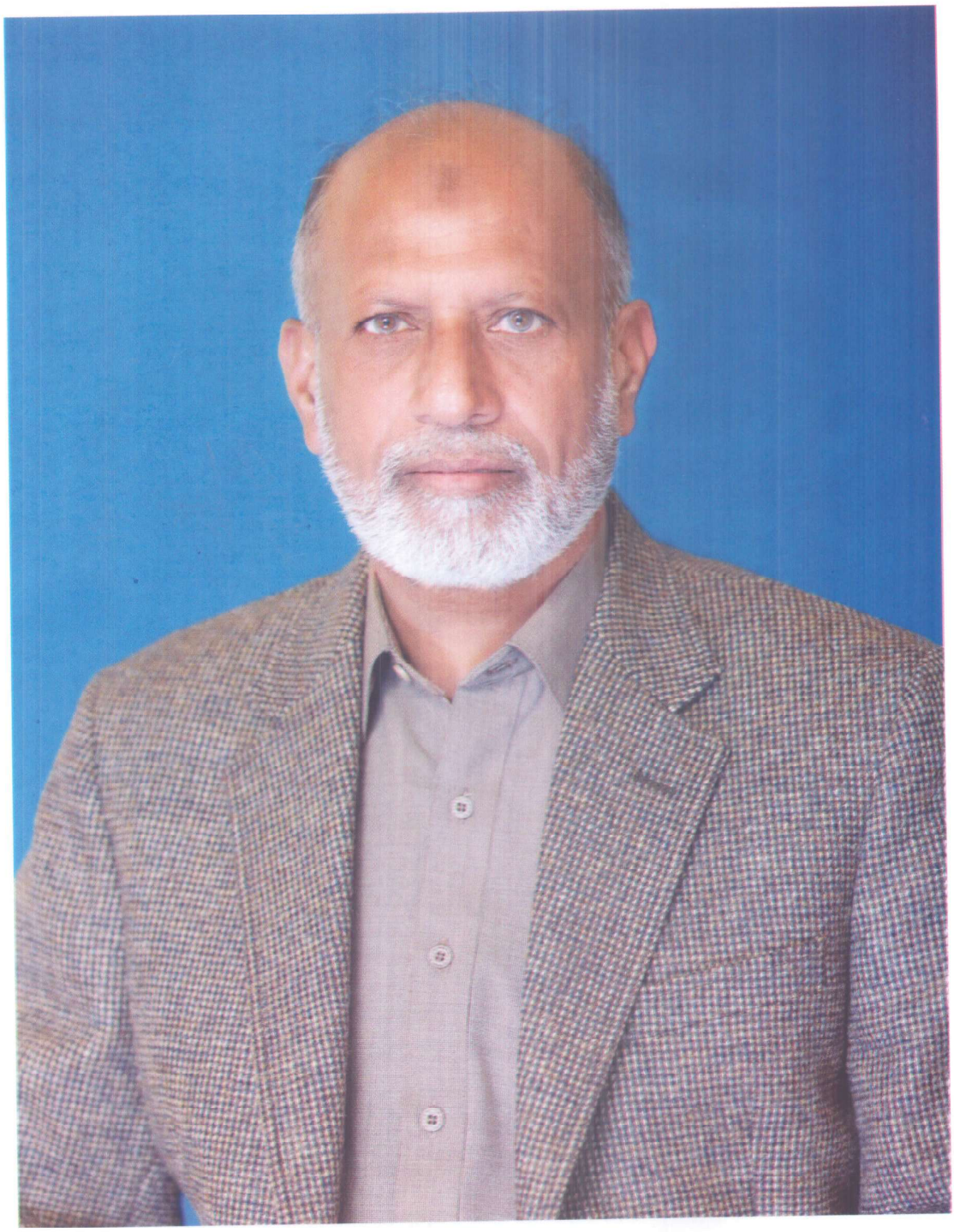
An introduction

I acquired the degrees of B.Sc. Civil Engg. and MSc in Hydraulics and Irrigation Engg. from University of Engineering and Technology Lahore in 1985 and 2001, respectively. I started my career from a consulting firm, then joined WAPDA as Junior Engineer and served there for a period of 16 months. Thereafter, joined Irrigation Department in 1987 and served the Deptt. till Feb. 2021 in various capacities and retired as Chief Engineer. Presently, I am working as freelance Consultants and imparting my input on ADB financed water sector projects.

I have track record of 35 years of working experience ranging from operation and maintenance of century old irrigation system to planning, designing, procurement and implementation of Mega projects of canal systems and Punjab barrages. Appreciations letters were issued by the Govt. in favor of mine on timely completion of projects on MR Link and BS Link Canals.

During the period 2007 to 2021 (Feb.), I served PMO-Punjab Barrages as Deputy Project Director & Head/Project Director performing role of Employer/Client as defined in the FIDIC documents of contracts. I have remained involved in preparation of feasibility and detailed design studies, project approval processes and procurement of consultants and contractors. I assisted Punjab Govt. during loan negotiations with the World Bank and ADB for barrage projects. Being core team member and Head of PMO Punjab Barrages managed implementation of Jinnah, New Khanki, Suleimani, Trimmu and Panjnad Barrages projects through various NCB, ICB works and Consultancies contracts. I got opportunities of getting local and foreign trainings in the fields of Procurement of goods, works and services, Alternate Dispute Boards, Project Cycle Management etc.

Besides my professional activities, I have been participating in the organizational activities of Pakistan Engineering Congress (Established in 1912) and in these days holding office of President Pakistan Engineering Congress for the 76th session.



Engr. Amjad Saeed
President
Pakistan Engineering Congress
(76th Session)

ENVIRONMENTAL DEGRADATION AND CLIMATE CHANGE IN PAKISTAN

Iftikhar Ul Haq

Environment and climate change are inextricably linked to sustainable development. The key issues related to the climate change are, i) Pollution, ii) Global warming, iii) Overpopulation, iv) Waste disposal, v) Ocean acidification, vi) Loss of biodiversity, vii) Deforestation, and viii) Ozone layer depletion. The impacts of climate change on global economies include rising maximum temperatures, rising minimum temperatures, rising sea levels, higher ocean temperatures, an increase in heavy precipitation (heavy rain and hail), shrinking glaciers, thawing permafrost, etc. Human health is vulnerable to climate change. The changing environment is expected to cause more heat stress, an increase in waterborne diseases, poor air quality, and diseases transmitted by insects and rodents. Extreme weather events can compound many of these health threats. Climate change could wipe off up to 18% of GDP off the worldwide economy by 2050 if global temperatures rise by 3.2°C, the Swiss Re Institute warns. Forecast based on temperature increases staying on the current trajectory and the Paris Agreement and net-zero emissions targets not being met[1]. The World Economic Forum's Global Risks Report 2021[2] identified climate action failure as the most impactful and second-most likely long term risk facing the world in a year when populations continued to struggle mitigating the impact of the COVID-19 pandemic. The report warned that billions across the world were at a heightened risk of missing out on future economic opportunities and the benefits of a resilient global community.

Pakistan's Perspective:

Global warming is caused by the excessive emissions of greenhouse gases in the atmosphere. China, the US and other industrialized countries are the major contributors to greenhouse gas emission. Although Pakistan is not much contributing in global warming and climate change, yet it is the seventh most affected country in global warming ranking.

Pakistan is highly vulnerable to climate change due to its geographic location, high dependence on agriculture and water resources, low adaptive capacity of its people, and weak system of emergency preparedness. Climate change in Pakistan is expected to cause wide-ranging effects on the environment and people of Pakistan. The increased heat, drought and extreme weather conditions in some parts of the country, the melting of glaciers in the Himalayas threatens many of the most important rivers and agriculture sector of Pakistan. Pakistan's biggest environmental problem is water scarcity. The country is expected to face acute water scarcity by 2025, and will be the most water-stressed country in South Asia within two decades. Almost 30 million Pakistanis have no access to clean water. Water scarcity is increasing, land productivity is decreasing, and climate change is worsening these treats. The risk of natural disasters, coupled with climate change as well as economic shocks, adds to existing vulnerabilities.

---

1 Natalie Marchant, The World Economic Forum, 28 Jun 2021

2 The World Economic Forum - Global Risks Report 2021

Major Climate Change Threats to Pakistan's Economy:

Almost everyone around the world feels the effects of climate change, but the most vulnerable are people living in the poor countries like Pakistan who have limited financial resources to cope with disasters. The economy of Pakistan is further impacted negatively with the influx of Afghan Refugees for the last three decades. Pakistan contributes less than 1 percent of the world's greenhouse gases blamed for causing global warming, yet its 200 million people are among the world's most vulnerable victims of the growing consequences of climate change.

An ADB study[1] shows that the socioeconomic costs of environmental degradation are considerable with climate adaptation needs ranging between $7 billion and $14 billion per year. The government being cognizant of the situation is taking measures at policy, management and operational levels to mitigate the adverse effects of climate change in the country.

Pakistan's geostrategic location is a major attraction for developed economies to invest in for lucrative returns[2]. The country is strategically located in the crossroads of Asia with China as its neighbour in the north, India in the east, and Iran and Afghanistan in the west. Increased heat, drought and insect outbreaks, are all linked to climate change, hampering the state of economy. These have negative impacts on food production as well as energy sustainability. Declining water supplies, reduced agricultural yields, health impacts in cities due to heat, and flooding and erosion in coastal areas are additional concerns. Humans and wild animals face new challenges for survival because of climate change. More frequent and intense droughts, storms, heat waves, rising sea levels, melting glaciers and warming oceans can directly harm animals, destroy the places they live, and wreak havoc on the livelihoods of the people and communities. Pakistan is also facing the situation of increasing population and impacts of climate change on the economy become many folds under such situation.

Pakistan's water cycle is primarily affected area of climate change. Agriculture is one of the major sectors likely to be adversely affected by climate change. Climate change can disrupt food availability, reduce access to food, and affect food quality. Projected increases in temperatures, changes in precipitation patterns, changes in extreme weather events, and reductions in water availability may all result in reduced agricultural productivity. Seasonal smog is also due to climate change and pollution.

Pakistan has also suffered economically due to climate change. According to experts, Pakistan has faced around 150 freak weather incidents as a result of climate change in the past 20 years: flash floods, smog in winter, forest fires in summer, melting glaciers, freaky heatwaves, landslides, displaced population. During the floods in 2010-11, almost 10 percent of Pakistan's population was displaced in two provinces, one in the north and another in the south. Last year, the cost of extreme weather as a consequence of climate change was listed at $384 million; in the past 20 years, there has been a cost of almost two billion dollars to the national economy because of the ravages of climate change[3].

---

1 ADB. 2017. Climate Change Profile of Pakistan. Manila.

2 Sadia, Haroon & Niazullah: Mapping vulnerability to climate change and its repercussions on human health in Pakistan, Globalization and Health volume 8, Article number: 31 (2012)

3 Azeem, Muhammad, Climate change: causes, outcomes in Pakistan and a way forward, Daily Times 29 July 2021

Coping with the Challenges:

In 1997, Government enacted the Pakistan Environmental Protection Act to safeguard, conserve, rehabilitate and improve the environment of Pakistan through sustainable development measures and pollution control, among others. Although Pakistan is facing environmental challenges, which include climate change impacts, loss of biological diversity, deforestation and degradation of air and water quality, Pakistan is trying to respond well. Because of the deteriorating economy, the country could not do much. But still, the present government has launched the Ten Billion Trees Tsunami Programme to lead the country towards aiming at revival of forestry and control air, weather, wildlife, forestation, watershed management and soil conservation to combat the negative impacts of climate change. Pakistan is amongst the pioneers who have established a climate ministry. The country has also launched the Climate Change Policy 2012. The National Climate Change Policy comprehensively addresses all possible challenges of climate change and provides a foundational framework to tackle the problem. But Pakistan alone cannot do it. It is a global issue. The following steps need attention of the government to face the challenge.

- Undertake urgent reforestation and afforestation programmes on mountain slopes in KPK and northern areas.
- Build dams in Thar to store rainwater.
- Devise and implement a waste management strategy for mountainous areas. Proper waste disposal systems and awareness (especially for tourists) can help mitigate greenhouse gas emissions, air pollution and disaster risk.
- Ban diesel vehicles in the mountains.
- Switch to renewable energy sources.
- Acknowledge that Pakistan faces diverse climate challenges in different geographical and cultural contexts. For example, the climate impacts in Chitral will be vastly different from the impacts faced by Sindh. Therefore, there is a need to ideate solutions keeping in mind the context and diversity.
- Deploy a proactive approach rather than a reactionary one.
- Make climate change a priority in the development and political agenda.

These efforts are urgently required, but it is also important to recognize that the onus for change is not completely on the government. We, as aware citizens, need to demand action on these issues and work closely with governmental and non-governmental institutions to ensure that these measures get implemented. It is time to shun passivity and take an active part in climate advocacy. Given below are some important actions that we undertake in fighting against the climate change issue.

- Replace disposable items with reusable items.
- The use of paper should be avoided.
- Conserve water and electricity.
- Support environmental friendly practices.
- Recycle the waste to conserve natural resources.

WELCOME ADDRESS

By

Engr. Amjad Saeed

President Pakistan Engineering Congress

On World Water Day, 2021

On the theme of "Valuing Water"

The Honorable

Mr. Muhammad Mohsin Leghari,

Minister for Irrigation, Punjab,

Distinguished Guests & the team representing WWF,

Members of Pakistan Engineering Congress,

Assalam-o-Alaikum and Good Morning!

Pakistan Engineering Congress is celebrating World Water Day every year since 2005 on the Themes announced by UN-Water. It is not less than Iconic that since then 171-Technical Papers on different Water related Topics have been presented from the Congress Forum. These papers were documented in the shape of 16-Volumes and distributed complimentarily to Members of Congress, Libraries, Educationists, Water Resources Experts, Concerned Provincial and Federal Government Departments and have been up-loaded on Congress Web site www.pecongress.org.pk, as well.

Ladies & Gentlemen!

This year the theme of World Water Day is "Valuing Water". Pakistan Engineering Congress in collaborative with WWF has assembled a galaxy of eminent Water specialists who will be presenting their proposals on the theme of "Valuing Water" and pertinent relevant issues.

Ladies & Gentlemen!

At the time of construction of Mangla Dam and Tarbela Dam, the then World Bank President observed that Pakistan is destined to put in place One (i) Mega Dam every decade. If this sane advice had been implemented 3-4 Multi-purpose reservoirs would have been under operation leading to abundant water availability contributing to robust agriculture, cheap electricity generation and industrial advancement. However, due to gross indifference and ill planning, the country is faced with Power & Water shortage and consequent economic slowdown.

Ladies and Gentlemen!

In 2016, PCRWR reported that Pakistan touched the "Water stress line" in 1990 and crossed the "Water scarcity line" in 2005. The agriculture sector according to the Economic Survey of Pakistan contributes about 20% to the total GDP and also provides employment almost to a half of total population of Pakistan. Similarly, the

majority of Pakistan's export goods rely on agriculture. About 70% of the export goods are agriculture products. This means that agriculture is the backbone of country's economy. But the agriculture sector is dependent on water (consume 90% of Water). Thus, the water scarcity results in severe economic distress to country's economy. But merely due to the lack of poor concepts on valuing the water, the water having an economic value of about $ 70 Billion is being thrown into the sea every year in a water starved country.

Ladies and Gentlemen!

Decades have gone by but the country has failed to tackle the Hill Torrents "that are without any tree cover/vegetation, upon rains, the water gushes, out through over flowing Nullah's destroying everything in the path property, homes etc. The rain water drained out by Hill Torrents can be stored in 1200 well identified Spaces i.e. Mini Water Reservoirs / Tanks and used in brining 1.409 MAF additional land under cultivation. Besides harnessing hill Torrents, there is dyer need to develop underground Plan Water Storage plan and avoid urban flooding.

Ladies and Gentlemen!

Numerous countries are also tapping other sources of storage and preservations of water:

- Harvesting Rain Water.
- Under ground Water storages to store rain water and minimize urban flooding.
- Waste water utilization after treatments unavoidable for Food & Fiber Security to meet the demands of increasing population.
- Saving Water ways from Industrial effluent and domestic waste water

Thanks

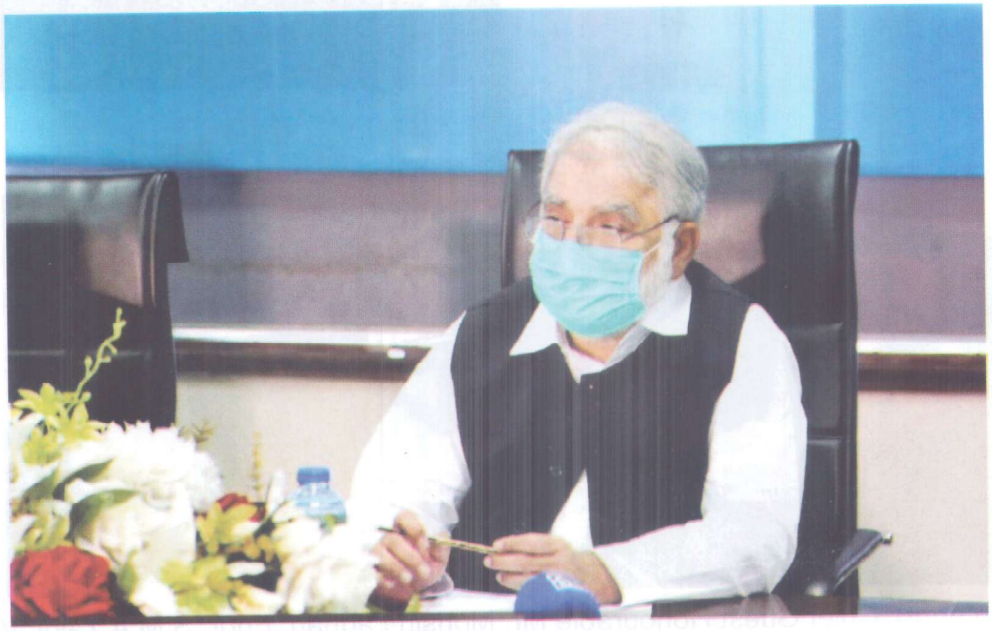
Pakistan Paindabad

Glimpses of World Water Day 2021

Held on March 27, 2021
On the Theme of "Valuing Water"



(From Right): Engr. S.M.A. Zaidi, VP & Engr. Amjad Saeed, President PEC welcoming the Chief Guest Honorable Mr. Muhammad Mohsin Laghari, Minister for Irrigation, Govt. of the Punjab on arrival at Congress Headquarters



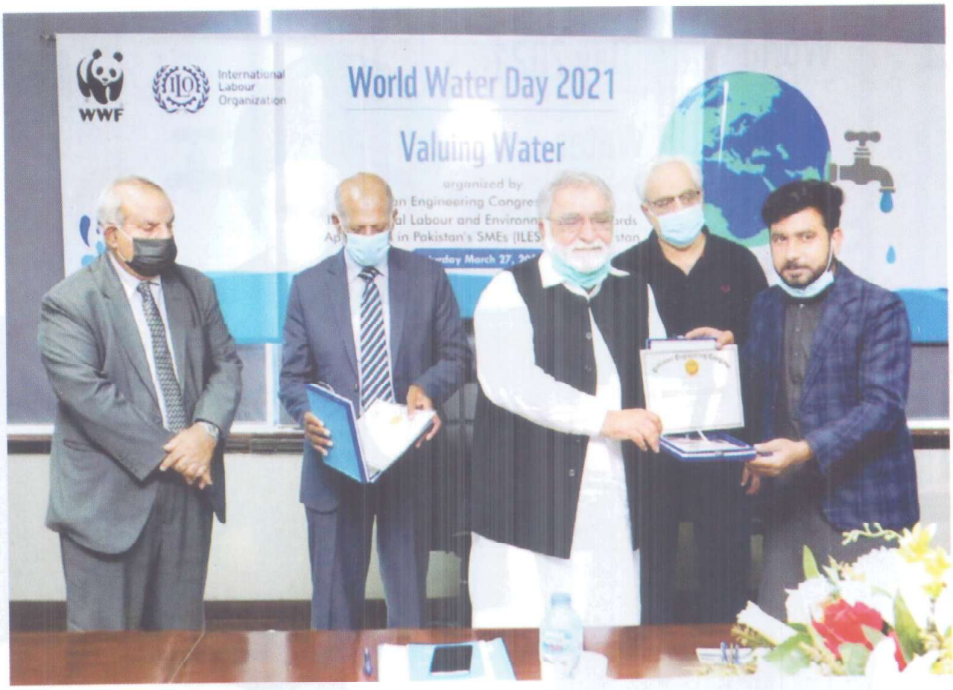
The Chief Guest, Honorable Mr. Muhammad Mohsin Laghari, Minister for Irrigation, Govt. of The Punjab



(From Left): The Chief Guest, Honorable Mr. Muhammad Mohsin Laghari, Engr. Husnain Ahmad, Vice President PEC, & Engr. Syed Mansoob Ali Zaidi, Vice President



(From right): Chief Guest Honourable Mr. Mohsin Laghari, Engr. S.M.A Zaidi, V.P., Engr. Amjad Saeed, President PEC



The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Mr. Sajjad Ahmad for presenting his paper on the topic of "Community Water Stewardship Replenishing Groundwater Resources in Lahore".



The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Engr. Riaz Nazir Tarar for presenting his paper on the topic of "Enhancing Value of Water in the Context of United Nations Sustainable Development Goal (SGD-6)".



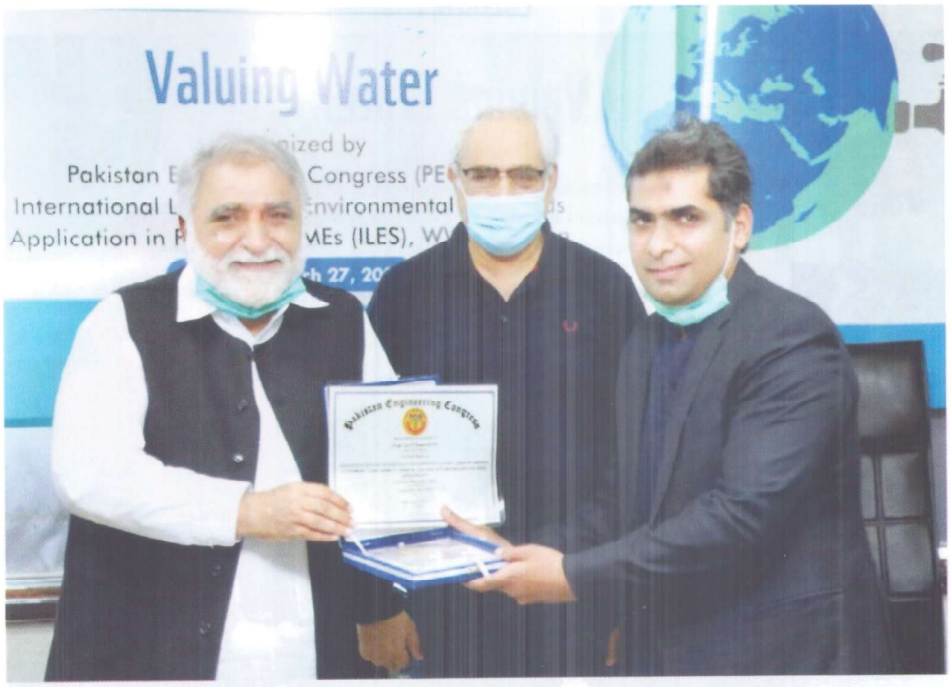
The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Engr. Raza ur Rehman Abbasi for presenting their paper on the topic of "Revival of Degraded Rivers in Punjab".



The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Mr. Muhammad Ahmad for presenting his paper on the topic of "Holistic Approach to Include Total Value of Water Economic, Social and Cultural".



The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Engr. Dr. Muhammad Saeed for presenting his paper on the topic of "A Review on Importance of Water and its Saving at all Levels".



The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Syed Hammad Ali for presenting his paper on the topic of "Identification Of Potentially Hazardous Glacial Lakes In Chitral Catchment Using Remote Sensing / GIS for Future Hazard and Risk Assessment".



The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Syeda Hamayal Zahra Naqvi for presenting their paper on the topic of "Solutions to the Global Impacts of Climate Change on Water Resources – A Comprehensive Review".



The Chief Guest Honorable Mr. Muhammad Mohsin Laghari is presenting shield to Ms. Laiba Rafiq for presenting their paper on the topic of "Solutions to the Global Impacts of Climate Change on Water Resources – A Comprehensive Review".



From Left: Engr. Amjad Saeed, President PEC, the Chief Guest, Honorable Mr. Muhammad Mohsin Laghari, Minister for Irrigation, Govt. of The Punjab & Engr. Syed Mansoob Ali Zaidi, Vice President PEC



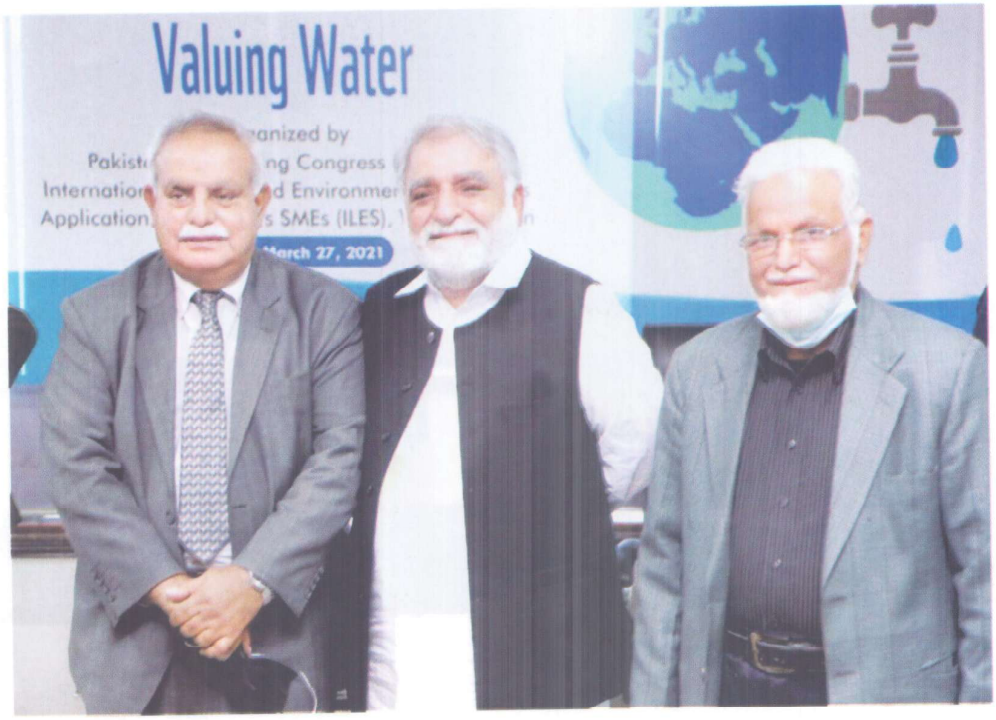
Engr. Amjad Saeed, President Pakistan Engineering Congress



The Chief Guest, Honorable Mr. Muhammad Mohsin Laghari being interviewed by members of Electronic Media / Press



(From Left): Engr. Amjad Saeed, President PEC & Engr. Husnain Ahmad, Vice President PEC are presenting the Pakistan Engineering Congress Shield to the Chief Guest Honorable Mr. Muhammad Mohsin Laghari, Minister for Irrigation, Govt. of the Punjab



(From Left): Engr. Muhammad Anwar Qaseem Qureshi, VP, the Chief Guest Honorable Mr. Muhammad Mohsin Laghari, Minister for Irrigation, Govt. of the Punjab and Engr. Capt. (R) M. Qadir Khan, Joint Secretary PEC



(From Left): Engr. Raza ur Rehman, Engr. Syed Mansoob Ali Zaidi, Vice President PEC, and Engr. Muhammad Usman



(From Left): Engr. Capt. (R) M. Qadir Khan, Member Executive Council and Engr. Riaz Nazir Tarar



(From Left): Engr. Ifrah Kamil, Engr. Muhammad Abdullah, & Engr. Muhammad Ahmad of WWF Pakistan

Glimpses of the Audience







Group Photo with the Chief Guest Honourable Mr. Mohsin Laghari, Ministry for Irrigation Punjab

(From Right): Engr. Hasnain Ahmad, Vice President PEC

(On Left): Engr. Amjad Saeed, President PEC

MINISTER FOR MULTI-PRONGED APPROACH TO TACKLE WATER ISSUES

LAHORE: World Wildlife Fund (WWF)-Pakistan under its project titled "International Labour and Environmental Standards Application in Pakistan's SMEs (ILES)" funded by the European Union and in collaboration with Pakistan Engineering Congress celebrated World Water Day 2021.

The theme of this year's celebration was "Valuing Water". Water crisis is one of the greatest risks to the global economy, almost half the world's population will face severe water scarcity by 2030 if urgent action is not taken. Therefore, different experts from government sector, academia and NGOs gathered to share their knowledge on valuing water for sustainable water management.

Minister for Irrigation Mohsin Khan Leghari was the chief guest of the ceremony. Speaking on the occasion, he said that there was a dire need to take a multi-pronged approach to tackle water issues, including focus on water conservation initiatives, building adaptation and resilience to climate change, increasing public awareness, improving agricultural practices and introducing cost effective indigenous water and management technologies. He added that everyone should contribute to making Pakistan a water secure country.

Amjad Saeed, president Pakistan Engineering Congress, said that agriculture is the backbone of Pakistan's economy. However, this sector is consuming more than 90 percent of our freshwater resources. Lack of understanding the value of water has seen over $70 billion worth of water being thrown to the sea every year by the country. He added that we need to tackle the potential of the hill torrents which can bring an additional 1.5 Million Acre Feet of land under cultivation.

Muhammad Abdullah, Manager Freshwater, WWF-Pakistan, stressed on the need for implementing Integrated Water Resource management in order to ensure the sustainable water supply for the country. He added that we should understand the ethical and economical value of water in order to better manage our water resources. He said that health and well-being, sustenance of environment, biodiversity and economy are all reliant on adequate water supply. Therefore, we cannot let it succumb to the "tragedy of commons". The webinar was attended by a diverse group of participants, including researchers, academics and government officials who actively participated in it as speakers and participants.

SMOG AWARENESS CAMPAIGN

Lahore, 5 January: WWF-Pakistan, in collaboration with Pakistan Engineering Congress (PEC), conducted an awareness drive with traffic wardens and the civil society on 5 January 2021. The event was organized to establish a consensus on the roles, responsibilities and actions required to ensure clean air for all, especially traffic wardens who are on the front line regulating traffic and are directly exposed to polluted air.

During her opening remarks, Nazila Butt. Senior Manager, Climate and Energy Program. WWF Pakistan talked about WWF's continuous efforts to re-create awareness about air pollution and its repercussions, not only through digital platforms, but also face-to-face seminars with key stakeholders. Air pollution not only remains a global environmental threat but also has immense economic implications.

Nimra Zareen, Assistant Manager. Lahore Waste Management Company (LWMC) also shared insights on the prevailing condition of air pollution in the country. She highlighted the current initiatives taken by the organization in managing waste in Lahore and actions to tackle the issue of waste burning, which releases toxic gases exacerbating health problems. According to Wajeeh Usman. Transport Economist from the Transport Planning Unit (TPU), transport related emissions are responsible for a staggering 43 per cent of total emissions in Pakistan, and the role of policy and hard interventions such as vehicular pollution control technology, introduction of low sulphur fuels, better traffic management, etc are essential in tackling the issue. He also pointed to initiatives such as the Vehicular Inspection and Certification System (VICS) and extensive road checking campaigns undertaken in the transport sector.

Participants were also informed about interventions initiated by the Provincial Disaster Management Authority (PDMA): Hameed Malik, Additional Director General. PDMN spoke about the GIS mapping of brick kilns to shutting down of kilns not using zigzag technology and controlling crop stubble burning. The chief guest, Waseem Dar. Senior Traffic / SP City Division, City Traffic Police Lahore, stated that. Vehicular emissions are the top contributors in air pollution and the Traffic Police is at the forefront. To counter the problem, heavy fines are imposed on vehicles producing smoke beyond legal limits and those which do not have fitness certificates.

While speaking in the event, Dr. Masood Arshad. Senior Director, Water. Food and Climate Programmes, WWF-Pakistan stated that, Air quality in Pakistan is deteriorating rapidly, with a yearly average of 68 micrograms per cubic metre of respirable particulate matter (PM) 2.5 micron, which is significantly above the National Environmental Quality Standard (NEQS) for ambient air set at 15 micrograms per cubic meter. The Air Quality Index (AQI) has been observed between 200-400, which is beyond the healthy limit thus leading to adverse health effects, such as respiratory problems, on the country's population, WWF-Pakistan recognizes the need to create environmental awareness, take immediate preventive measures and find solutions that help improve air quality.

President PEC concluded the event by noting, "I applaud WWF-Pakistan for coming forward in taking such an initiative and partnering with Pakistan Engineering Congress, to create awareness, and lead the work on tackling air pollution in the country."

Thereafter, shields were distributed by Dr. Masood Arshad, Senior Director, Water, Food and Climate Programmes, WWF-Pakistan and President Pakistan Engineering Congress (PEC) to the chief guest and 150 smog kits were provided to traffic wardens to mitigate the problem of poor air quality and ensure all required protective equipment is available with them. Each kit contained a PM 2.5 mask, eye drops and lozenges to alleviate eye and throat irritation. The kits were distributed to the wardens.

GYPSUM DEPOSITS OF PUNJAB RESOURCE POTENTIAL. CHALLENGES AND EXPORT OPPORTUNITIES

Gypsum is second most soft sedimentary rock deposit having chemical formula of $CaSO_4 2H_2O$. It can be easily eroded and dissolved by rain water. Due to its surface exposure and ease weathering its deposits are depleting naturally as well.

In the province of Punjab, Salt Range (extending from District Jehlum to Mianwali) and Suleiman Range in District Dera Ghazi Khan, have good deposits of gypsum. In the Salt Range, especially Khushab, Chakwal. Jhelum and Mianwali Districts, Salt Range Formation of Precambrian age acts as a cap rock of the Rock salt. Thickness of Gypsum varies from place to place in the Salt Range, however, average thickness is about 10-15 ft with intercalation of marl and clay beds. In Suleiman Range, Gypsum is the part of Baska formation of Eocene age. Here gypsum beds are also intercalated with clay/shale. However, average thickness of these bed is 30-35 ft and quality is much better than that of the Salt Range formation. Gypsum deposits of Salt Range are being mainly used for production of cement, to improve the fertility of saline lands, plaster of paris and some quantity is exported to neighboring countries. As gypsum is considered as cap rock of Rock salt, therefore, blasting of gypsum on rock salt mines is restricted which is the main reason of low production of the mineral. Quality deposits of gypsum in Salt Range have already depleted due to enhanced production capacities of existing cement plants of Punjab. The existing production capacity of cement plants has reached up to 80000 tons/day. About 33 companies have also applied for installation of cement plant with the production capacity of more than 2 lac tons/day. As Gypsum enhance the settling time of cement and it is used up to 8% as constituents. It is also added that 66 plants for plaster of paris and 28 plants for crushing of gypsum with the production capacity of about 3000 tons/day have been installed in Province of Punjab. Export of Gypsum to neighboring countries on cheaper rate is also a main factor of depletion of resources in Salt Range.

The annual reported production of Gypsum is also added below

Years	2016-17	2017-18	2018-19	2019-20
Production (T)	1489935	1719401	1535592	1240087

Gypsum deposits of Salt Range are almost explored and new deposits cannot be added in the present resource.

Keeping in view the present demand of gypsum for cement sector, fertilizer, plaster of paris, these deposits of Salt Range are not sufficient to meet the requirement of province in very near future. Therefore, export of gypsum to neighboring countries may be discouraged from Salt Range.

As far as gypsum deposits of Suleiman Range in District D.G. Khan and Rajanpur are concerned, there are vast deposits and not fully explored so far due to security reasons. In Rajanpur District which have 200 km of Suleiman Range have only 02 concessions and nominal production. The quality of these deposits is very good and have no issue of cap rock like Salt Range. These deposits can be explored through Government or private sector by granting new License under Rule-187 of PMCR-2002 especially in District Rajanpur. After tharough resource estimation of these deposits and keeping in view the future demand of country some portion can be exported to foreign countries for earning foreign exchange.

RS. 936 MILLION CONTRACT AWARDED FOR CIVIL WORKS OF 2ND REHABILITATION PROJECT OF WARSAK HYDEL POWER STATION

The Pakistan Water and Power Development Authority (WAPDA) awarded the contract of Civil Works worth Rs.936.29 million through an international competitive bidding for 2nd Rehabilitation of Warsak Hydroelectric Power Station to Technicon Enterprises.

The contract was signed in a ceremony held here at WAPDA House. General Manager (Hydel) Development Nadeem Iqbal and Chief Executive Officer Iqbal Yunas signed the contract on behalf of WAPDA and Technicon Enterprises respectively. WAPDA Member (Power) Jamil Akhtar and other senior officers of WAPDA were also present on the occasion.

WAPDA has been vigorously implementing a least-cost energy generation plan to add low-priced hydel electricity to the system. In addition to constructing new projects, WAPDA has also been rehabilitating and up-grading its aging hydel power stations, including the Warsak, under the plan.

WAPDA is executing Second Rehabilitation Project of Warsak Hydel Power Station to regain its generation capacity, which has decreased to 193 MW from 243 MW due to aging factor of the electro-mechanical equipment. The rehabilitation works are planned to be carried out with an approved PC-I cost of Rs.22.25 billion with the objective to overcome the aging problems, regain the capacity loss of 50 MW with reliable annual energy generation of 1.14 billion units, upgrade and modernize the old system and achieve another life cycle of 30 to 40 years.

It is pertinent to mention that Warsak is the first ever main hydropower project executed in Pakistan after independence. The first phase of the Warsak Dam and Hydel Power Station was completed in 1960-61 consisting of the dam, irrigation tunnels, four generating units with cumulative capacity of 160 MW, switchyard and transmission line.

In the second phase, two more generating units of about 83 MW were added in 1980-81 to raise the installed capacity of the hydel power station to 243 MW. The first rehabilitation was carried out during 1996-2006 to stabilize civil structure and recover lost generation of about 70 MW.



April 12, 2021: WAPDA GM (Hydel) Development Nadeem Iqbal and Technician Enterprises CEO Iqbal Yunas signing the civil works contract for 2nd Rehabilitation of Warsak Hydroelectric Power Station at WAPDA House. WAPDA Member (Power) Jamil Akhtar also present on the occasion (WAPDA Photo)

BRIEF OF AMRI WHEAT BED PLANTER



INTRODUCTION

Agricultural mechanization research Institute (AMRI) Multan being the apex body for promotion of farm mechanization in the province acting an important role in advancing agricultural mechanization research from conventional to latest technology.

The institute is undertaking R&D for low cost and appropriate agricultural machinery and farm mechanization technologies. It comprises of different sections i.e. Design & Development, Fabrication & Workshop, Test & Field research, and Faisalabad Research Division. The institute is providing industrial extension service to the local agricultural machinery manufactures for production of standardized and quality machinery and implements through prototype development, testing & evaluating

Wheat is one of the major crops of Pakistan. According to Economic Survey of Pakistan 2017-18, wheat is cultivated on an area of 21,573 thousand acres. It is a common practice of farmers to use 40-50Kgof wheat seed per acreby using conventional dill and up to 60kg/acre through broadcast method. The variation in seed rate depends upon the sowing time, type of soil and quality of seed. Annually thousand tons of seed is being used for sowing purpose. In order to address this issue Agricultural Mechanization Research Institute (AMRI) has designed and developed a low cast Wheat Bed Planter.

SPECIFICATIONS OF WHEAT PLANTER

Minimum requirement of Tractor Power	50 HP
Number of rows	08
Width of bed	24-27 inch (Adjustable)
Width of furrow	18inch
Depth of furrow	9 inch
Row spacing	Adjustable
Plant to plant distance	Adjustable
Capacity of seed hopper	1 lit.
Capacity of fertilizer box	100 kg
Field capacity	1.5 acre/hr.

MATERIALS AND METHOD

Test and Trial Section of the Institute made trial at various locations in the Multan and Khanewal District for sowing of Wheat on Beds.Before planting of seed the experimental plot was pulverized with primary and secondary tillage. The experimental plot was sown with wheat bed planter at Tibba Sultan Pur on dated 15-12-2018.

The Planter was adjusted to attain row to row and plant to plant distance up to 9 x 9 inches. The row to row distance was adjusted by changing the position of units on tool bar and plant to plant spacing was adjusted by changing the set of drive sprockets which are provided with the planter. By these adjustments the seed rate was approx. obtained 04 kg/acre as per requirement. The seed rollers were design to drop single seed per hill. During the trial it was observed that 75 % dropping was single sees while 25 % was double seed per hill. The variation in dropping of seed was due to non-uniform size of seed.



Figure 3: Mumtaz Khan Manais (Chairman R &D Board) Wheat sown on Beds with AMRI Planter

RESULTS

During the trial, agronomic data was collected at different stages to monitor the response of crop at low seed rate. The data of mature crop was collected on 15-04.-2019.The detail is as under.

Sr. No	Data Collected	R-1	R-2	R-3	Total	Average
1	No. of Plants per m^2	12	14	11	36	12
2	No. of Tillers per plant	25	32	28	85	28
3	No. of spike lets per spike	18	20	18	56	19
4	No. of grain per spike	36	39	32	107	36
5	Yield	385 g	375 g	398 g	1158 g	386 g/m2 0.386 kg/m2 1562 kg/acre 39.05 Mond/acre

Advantages of Wheat Bed Planter

- The planter is capable to use 4 kg of seed for sowing of one acre by saving the Rs.2875 per acre in term of seed as compared to the conventional methods.
- In this method plant make more tillers due to availability of more space, batter aeration/ sunlight and more suitable pulverized bed for batter development of root zone.
- By using bed and furrow technology the farmer can save water up to 40-50% depending upon type of soil.
- The bed sowing method also prevents the crop from lodging.
- The planter can also be used for sowing of all kinds of vegetable/small seeds by changing the seed rollers.
- It can use for flat sowing by detaching the bed former unit.

900MW RLNG BASED COMBINED CYCLE POWER PLANT BIN QASIM POWER STATION PHASE III AT KARACHI

The 900MW CCPP Power Plant is located at Bin Qasim Karachi, Sindh. Karachi Electric Pvt Ltd had signed contract with the Harbin Electric International, China on Turnkey basis for the Engineering, Procurement and Construction of the project.

With the objective to augment professional advisory team of Consultants with relevant expertise, the following professional firms have been engaged by KE as consortium of Engineering Consulting Firms:

- TractebelEngie
- NESPAK
- RE-2

NESPAK, as part of a consortium partner on the proposed project is rendering services for EPC bid evaluation, assistance during award of contract, support in preparation of tariff, generation license and various agreements i.e. PPA, GSA, IA, review of detailed design submitted by EPC contractor, site supervision and services during defects liability period etc.

The Project comprises of one block with two Siemens gas turbines, two HRSGs, and two steam turbines in a single shaft arrangement with a gross output of around 900MW. The Project will use RLNG as the primary fuel with high speed diesel as a backup fuel. The electric power shall be evacuated via the 220 kV GIS grid in close distance to the plant. The water for cooling purpose is drawn from the Sea.



The Plant shall be suitably designed, manufactured, installed; and complete in every respect for continuous operation at base load, as well as at part loads, and exhibits high availability and reliability. The Plant comprises well-proven components, built to internationally recognised standards, and designed to achieve high levels of operability, reliability, availability, and maintainability. The Plant complies with all the applicable national and statutory codes and consists of:

- Gas turbines –SIEMENS– 2 x 300 MW;
- Steam turbine – SIEMENS - 2 x 150 MW;
- HRSG – natural circulation, horizontal, three pressure with reheat (Benson Type) – 2 units;
- Generator – Siemens Hydrogen-Hydrogen Cooled – 2 units;
- Frequency – 50 Hz;
- The plant is designed for a lifetime of 240,000 operating hours over a period of 30 years.
- Gross Output : 900 MW





Current Status:

Electro-mechanical design review is ongoing. 50 % Civil work completed and mechanical work on going for power train. GT-01 arrive at site. The Simple Cycle (GT1/GTG1 & GT2/GTG2 along with its all auxiliary systems and 220Kv switchyard) and other BOP Systems (including firefighting & HVAC systems) necessary for combine cycle operation is progress. Power Purchase Agreement (PPA) and Gas Supply Agreement (GSA) for the project are under negotiation.

1263MW RLNG BASED COMBINED CYCLE POWER PLANT AT JHANG

The RLNG based 1263MW CCPP Power Plant is located near Trimmu Barrage at Haveli Bahadur Shah District Jhang, Punjab. Punjab Thermal Power (Pvt.) Limited (PTPL) had signed USD 520 Million contract with the China Machinery Engineering Corporation, China on Turnkey basis for the Engineering, Procurement and Construction of the project.

Government of Punjab / PTPL engaged NESPAK as its lead consultant on the proposed project. NESPAK, as primary consultant is rendering services for all phases of this Project including preparation of feasibility study, pre-qualification documents and bidding documents for hiring EPC contractors, bid evaluation, assistance during award of contract, support in preparation of tariff, generation license and various agreements i.e. PPA, GSA, IA, preparation of PQD and bidding documents for O&M and evaluation, review of detailed design submitted by EPC contractor, site supervision and services during defects liability period etc.



Moreover, with the objective to augment professional advisory team of NESPAK with relevant expertise, the following professional firms are also engaged by NESPAK as sub-consultants:

- Lahmeyer International (Tractebel) - Foreign Technical Advisors
- EY Ford Rhodes - Financial & Tax Advisors
- Cornelius Lane & Mufti - Legal Advisors
- Marsh - Insurance Advisors

The Project comprises of one block with two Siemens gas turbines, two HRSGs, and one steam turbine in a multi shaft arrangement with a gross output of around 1263MW. The Project will use RLNG as the primary fuel with high speed diesel as a

backup fuel. The electric power shall be evacuated via the 220 kV grid in close distance to the plant. The water for cooling purpose is drawn from the adjacent TrimmuSidhnai Link Canal. The Power Plant is accessible through Jhang-Shorkot Road which passes approximately 0.9 km from theProject Site.

The Plant shall be suitably designed, manufactured, installed; and complete in every respect for continuous operation at base load, as well as at part loads, and exhibits high availability and reliability. The Plant comprises well-proven components, built to internationally recognised standards, and designed to achieve high levels of operability, reliability, availability, and maintainability. The Plant complies with all the applicable national and statutory codes and consists of:

- Gas turbines - SIEMENS SGT5-8000H – 2 x 410MW;
- Steam turbine – SIEMENS SST5-5000 - 1 x 443.2MW;
- HRSG – natural circulation, horizontal, three pressure with reheat (Benson Type) – 2 units;
- Gas turbine generator – Siemens Hydrogen-Hydrogen Cooled – 2 units;
- Steam turbine generator –SiemensHydrogen-Hydrogen Cooled – 1 unit;
- Frequency – 50 Hz;
- The plant is designed for a lifetime of 240,000 operating hours over a period of 30 years.
- Gross Output : 1263 MW
- Net Output : 1242.7 MW
- Net Efficiency : 61.16%





Current Status:

The Simple Cycle (GT1/GTG1 & GT2/GTG2 along with its all auxiliary systems and 220Kv switchyard) and other BOP Systems (including firefighting & HVAC systems) necessary for simple cycle operation have been completed and cold commissioning done. Power Purchase Agreement (PPA) and Gas Supply Agreement (GSA) for the project have been signed. The construction of Combined Cycle (ST&STG, its auxiliary systems and related BOP systems is in progress. Bidding Procedure for Selection of O&M Contractor is currently being undertaken as well.