

# Caring for Wetlands

an answer to  
Climate Change

## Newsletter Wet Notes

www.pakistanwetlands.org

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The newsletter of Pakistan Wetlands Programme (PWP) is published to inform donors scientists, academics, researchers, environmentalists and environmentally concerned individuals of all qualifications and ages about the Programme, its projects and upcoming events while giving insights and updates on research, education and habitat management activities. The PWP's objective is to conserve the globally important wetlands biodiversity in Pakistan while alleviating poverty. It is a progressive initiative of the Federal Minister of Environment and is being implemented by the World Wide Fund for Nature, Pakistan (WWF P). It is funded by a consortium of national and international donors including, the Global Environment Facility (GEF), United Nations Development Programme (UNDP), Embassy of Kingdom of Netherlands (EKN) and WWF Global Network.

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### Celebrations of Life

World Wetlands Day-2010

## Programme updates

### » Training & Capacity-building

This year, diverse training courses were organised by the Training and Capacity-building Section of the Pakistan Wetlands Programme. These courses include Wetlands Management as a Multi-stakeholder Process, Basic Scuba Diving, Monitoring and Evaluation, Community Empowerment for Sustainable Wetlands Management and Training Needs Assessment for Capacity-building. The purpose of organising such training courses was to impart knowledge and skills to the participants so that they can play their role effectively for the conservation, protection and restoration of wetlands.

From January to May 2010, six training courses were held in which 103 participants were trained. Participants were from various organisations which included government departments, developmental organisations, NGOs and universities.

### » Wetlands Management as a Multi-stakeholder Process

This training course was held at the Programme Management Unit of the Pakistan Wetlands Programme from January 20<sup>th</sup> – 22<sup>nd</sup>, 2010, in Islamabad. Eighteen participants took part, coming from various forest and wildlife departments of the country. Some other organisations from which participants actively participated were the Zoological Survey Department, IUCN, and

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Pakistan Museum of Natural History. The Multi-Stakeholder Process is a method of bringing all stakeholders to a single platform to address a particular issue or problem. A stakeholder can be anyone who can directly or indirectly influence a particular issue. This training proved beneficial and enhanced the skills of the participants in coordinating and communicating with each other on common issues.

### » Scuba Diving Training

Scuba diving is one of the basic tools needed by researchers to explore underwater aquatic life and coral reefs. Two orientation scuba diving training courses were designed in this regard. The first was conducted from February 23<sup>rd</sup> – March 1<sup>st</sup>, 2010 and the second from March 8<sup>th</sup> - 12<sup>th</sup>, 2010 at Islamabad and Khanpur Dam. These training courses were designed to enable participants to dive in confined water using appropriate scuba diving gear under the supervision of a highly trained instructor. Ten participants were trained in these courses.



**Underwater Scuba Diving**

Now the Pakistan Wetlands Programme aims to initiate the Open Water Diver course by our Open Water Diving Instructor Tariq Mahmood, a retired naval diving officer and PADI (Professional Association of Diving Instructors) qualified

instructor. He is here to lead the research teams of WWF/Pakistan Wetlands Programme and associated organisations in exploring marine biodiversity and coral reefs in the sea.

### » Monitoring and Evaluation

This training course was conducted in the Programme Management Unit of the Pakistan Wetlands Programme from February 25<sup>th</sup> – 26<sup>th</sup>, 2010 in which 24 participants from various organisations were trained. This two days training



**Group Presentation**

workshop on Monitoring and Evaluation was designed to increase the participants' skills in identifying and collecting relevant data and, by using effective monitoring tools, evaluate it to determine the success or failure of a given project. The objectives of the training course were to define the concepts of monitoring and evaluation, explain the concept of Logical Framework Analysis, or LFA, as a monitoring tool, and use it to monitor and evaluate projects.

### » Community Empowerment for Sustainable Wetlands Management

This two days training workshop was conducted at the Programme Management Unit of the Pakistan Wetlands Programme from April 20<sup>th</sup> - 21<sup>st</sup>, 2010 in which eighteen



**Presentation on Awareness-raising**

participants were trained. Community Empowerment refers to the process of building the capacity of communities by which they have increased control over their lives. Wetlands are of vital importance to them because they perform a range of environmental functions and provide various social and economic benefits to local communities.

### » Training Needs Assessment for Capacity-building

This two days training workshop was held at Daman-e-Koh, Islamabad from May 6<sup>th</sup> – 7<sup>th</sup>, 2010, with the objective of teaching the concept, approaches and components of a Training Needs Assessment.



**Participants with Chief Guest**

Thirty-five participants took part, coming from organisations such as the Forest and Wildlife departments, UNICEF, LEAD Pakistan, Muslim Aid, Helping Hand, Doaba Foundation, National Council for Conservation of Wildlife, and WWF - Pakistan and its Indus For All Programme.

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### » Field Trip to Uchchali Complex

On April 2<sup>nd</sup>, 2010, a field trip to Uchchali Complex was organised for the students of the University of Veterinary and Animal Sciences, Lahore. Sixty students participated and conducted studies on water quality, plankton diversity, plant diversity, insect diversity, bird diversity, benthic diversity, nekton or fish and crab diversity, and community dependence on natural resources.



Jamshad Chaudhry is explaining bird watching techniques

## Makran Coastal Wetlands Complex



Solar Panel is being installed

### » Coastal survey for Alternative energy models

The Pakistan Wetlands Programme's Makran Coastal Wetlands Complex recently conducted a series of surveys of wind and solar energy along the Makran coast. Five alternative energy models have already been installed in coastal villages by the programme, there is a plan to install four more in new localities. The survey covered wind speed, direction of wind, seasonal variation of wind and solar rays in the selected areas.

### » Two days eco-tourism trip arranged for WWF corporate members and customers

The Pakistan Wetlands

Programme and WWF - Pakistan Marketing Department organised a two days ecotourism visit for corporate members and customers of WWF - Pakistan to the Makran Coast. There were about 30 participants counting both the trips, and they were taken to Gaddani Beach, Hingol National Park, Nani Mandar, Pasni, Astolla Island, Gwader and Jiwani.

The basic aim of the trip was to highlight the ecotourism potential of the Makran Coast to help start the ecotourism industry there. This industry will be a good source of livelihood for local communities.



Storage Batteries



Solar Panel on top of the roof



Technicians installing the equipments



Wind Turbine

## Public Events

### World Wetlands Day 2010 - Celebrations of Life

**Theme: Wetlands, Biodiversity and Climate Change**

**Slogan: Caring for Wetlands - an answer to Climate Change**

Caring for Wetlands - **an answer to Climate Change**. With this slogan countries around the globe launched into another enthusiastic celebration of World Wetlands Day. Every year this day is celebrated on February 2<sup>nd</sup>, marking the signing of the 'Convention on Wetlands' in 1971 in Ramsar, an Iranian city by the shores of the Caspian Sea. It strives to highlight the importance of the fragile ecosystems of the



Federal Minister for Environment Inaugurating World Wetlands Day 2010

world's wetlands to governments, academia, NGOs, media and the average citizen, to promote conservation of wetlands of national and international importance. In effect, it creates awareness of constraints and opportunities in the sustainable management of wetlands and helps develop partnerships that lead to positive changes in the thinking of people regarding this vital natural resource.

This year's activities carried out by the Pakistan Wetlands Programme, or PWP, were largely adapted to the theme appropriately chosen by the Ramsar Bureau – 'Wetlands, Biodiversity and Climate Change,' since climate change has become an urgent topic and

action on it is needed by nations throughout the world. Although Pakistan contributes just 2.85% to global carbon dioxide, it is suffering disproportionately from the effects of global climate change which is manifesting itself in this area in the form of shrinking glaciers in the Himalayas, higher average temperatures, and extreme events such as droughts, cyclones, excessive rain and more frequent Glacial Lake Outburst Floods (GLOFs). Wetlands can help mitigate global climate change by acting as carbon sinks. The slogan for this year was designed to encapsulate this highly important role of wetlands in today's world.

As the premier platform in Pakistan devoted to the conservation of wetlands, the Pakistan Wetlands Programme celebrated this event with special fervour. A large number of activities directed at the general public, government line departments, universities and schools was arranged. Many of the activities were repeated at different places and schools with the objective of targeting a diverse audience. The activities encompassed cities as diverse as Lahore, Karachi, Gilgit, Rahim Yar Khan, Naushera Khushab, D.I. Khan, Chitral, Swat, Dir, Peshawar, Jhelum, Rawalpindi, Abbottabad, Gwadar, Jiwani and Islamabad. In fact, the programme spanned two months of vibrant events, starting on December 21<sup>st</sup> in the schools of Gilgit and culminating in a grand finale on February 13<sup>th</sup> at Bahria University, Islamabad.

Schools for underprivileged children were especially engaged for the celebrations. Competitions were held not only in the categories of essay writing, story



Richard Garstang visiting 3-D Models

writing, posters, 3-D models, quiz and nature photography but also in play performance, poetry, song writing, music, handicrafts and videos.

Of course, the celebrations would not be complete without the production and dissemination of extremely colourful and slick educational and informational material. This ranged from calendars, brochures, book marks, special Ferozaan magazine issue and souvenir badges to backdrops, streamers and Save our Species quiz game posters. School children and youth were highly motivated by a very beautiful environment song by Tahir Naeem, visually produced by Nasir Malik Coordinator Awareness-raising. And last but not least, a Turtle Poem Promo created especially by none other than PWP's own Nasir Malik, visually depicted the relentless killing of turtles for the sake of their body parts! It created a stir wherever it was shown.

Activities were not confined to school competitions. There were radio discussions, quiz competitions, awareness raising among waterfowl hunters, advocacy walks and wetlands related articles in newspapers throughout the four complexes of PWP. Sections of society as varied as government departments, NGOs, students, youth clubs, Boy Scouts, CBOs and the media were all caught up in this grand celebration of wetlands.



# Pictorial Highlights of the **World Wetlands Day 2010**













## » World Water Day 2010

The Pakistan Wetlands Programme (PWP) celebrated World Water Day with the United Nations Development Programme and the Environmental Protection Agency, at the Serena Hotel in Gilgit. World Water Day was on March 22<sup>nd</sup>, but PWP held celebrations in Gilgit-Baltistan for a full week to maximise the effect of raising awareness of the public on water issues.

World Water Day was established in 1992 by the United Nations, and this year's theme was 'Clean water for a healthy world.' Pakistan, which is staggering under a persistent shortage of water, also has to face the growing threat of polluted water. An estimated 1.1 billion people rely on unsafe drinking-water sources globally. The strategy of the PWP campaign was to approach citizens, city administration and government line departments and sensitise them on the importance of improving and maintaining water quality in the wetlands of the area.

Youth Clubs and other concerned citizens started water conservation projects well in advance of Water Day. Their campaign's aim was to replace leaking/broken water taps and pipes in selected parts of Gilgit City. Leaking taps waste a great quantity of water, and leaking water pipes lead to contamination of drinking water and consequently threaten human health. Youth Clubs volunteered to repair these with equipment provided by some partner organisations. These volunteers also cleaned water channels at selected sites in Gilgit.

PWP broadcast environmental messages on radio talk shows and local cable TV channels. An awareness-raising seminar was held with local Gilgit women in which water conservation tips and the issues of water pollution were shared. An advocacy walk was conducted at schools for water conservation in the main Gilgit bazaar during which awareness material on water conservation and wetlands was distributed to shopkeepers and passersby. A 'hydro poster' competition was also held among students of private and government schools of Gilgit. Shields and certificates were awarded to volunteers and participants.

A concluding seminar was held at the end of the week, again at Serena Hotel in Gilgit, at which experts from relevant organisations working on water quality issues shared their findings with the participants.



Advocacy Walk on World Water Day in Gilgit

## » Earth Day 2010

Islamabad, April 22<sup>nd</sup>, 2010: The Pakistan Wetlands Programme, celebrated Earth Day with the Himalayan Wildlife Foundation at the Margalla Hills National Park, where they held a solid waste management campaign at Trail 5. The aim of this campaign was to raise awareness among the general public, specifically schoolchildren, about conservation of the environment, and to highlight environmental issues. Other activities included bird watching, environment study with nature photography, plant study and an advocacy walk.

Earth Day was created to remind us of our shared responsibility to protect the planet. It came into being 40 years ago, with the aim of telling the world that we were not protecting our planet and its natural resources and that if we didn't start, they would run out.



Participants of Earth Day's Activities



### » F.C. College Funfair 2010

WWF - Pakistan in collaboration with the Pakistan Wetlands Programme participated in the spring funfair held at F.C. College Lahore on March 1<sup>st</sup>, 2010. The funfair was organised by the Earth Watch Club of F.C. College and its purpose was to make students aware of environmental issues by engaging them in different, exciting and interesting games / activities. A large number of students visited WWF - Pakistan's stall where they were given individual memberships, free posters, brochures, magazines and information material about the Pakistan Wetlands Programme, Indus for All Programme and WWF - Pakistan's projects. Students and teachers were briefed about WWF and its functions. A lot of students took part in a quiz about the wetlands of Pakistan.



Students at the stall of WWF

### » International River Day 2010

March 14<sup>th</sup>, 2010: A team made up of Doaba Foundation, Muzaffargarh; Rural Development Policy Institute, Islamabad; Shehersaaz, Islamabad; and Pakistan Wetlands Programme, CIWC went to the village More Theme, near the Chenab River, District Muzaffargarh. The aim was to celebrate International River Day, with the theme 'A day of action against dams.' The team was welcomed by two village girls called Nagina and Asma, as well as a large crowd.

A formal ceremony ensued in which the Chenab Forum, a platform made by five union councils to build a good working relationship between the government and the communities, was introduced.

Then Meer Ali, the oldest inhabitant of the village, told the congregation how the village had thrived in the old days, the days before Pakistan's dams when the Chenab River was a full one. The inhabitants used to catch fish to live. Now the river has very little water and there are few fish.

A boy called Sadique gave a performance in which he acted out the river. He showed how the

river had gotten 'old', and now nobody paid it any respect, as it was 'emptying' because of the dams.

Bird identification was done through pictures, an activity happily participated in specially by the women. A drawing competition was also held, and stickers handed out as free gifts. At the end of the ceremony, residents presented a dance as a tribute to the Chenab River.

### » International Mountain Day 2009

International Mountain Day is yet another opportunity to raise awareness on the importance of mountains to life, to highlight the opportunities and constraints in mountain development and to build partnerships that will bring positive change to the world's mountains, their resources and the communities dependant on them.

The United Nations General Assembly designated December 11th as International Mountain Day. This decision results from the success of the UN International Year of Mountains in 2002, which increased global awareness of the importance of mountains, stimulated the establishment of national committees in 78 countries and strengthened alliances through promoting the creation of the International Partnership for Sustainable Development in Mountain Regions, known as the Mountain Partnership.

### » Celebration in Chitral

Chitral is a mountainous region with more than 80% of its covered area comprising mountains, glaciers and rangelands. It is a landlocked area surrounded by mountains. The average heights of passes connecting Chitral with neighbouring areas is above 12,000 ft. Like the rest of the



International Mountain Day in Chitral

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mountain communities in the world, Chitralis face the problems of lack of access, landslides, glacier outbursts, flash floods.

Lack of awareness regarding the significance and sustainable use of available resources due to insufficient education and lack of exposure is another problem. Since 2001 the district has



witnessed numerous devastating events like glacier outbursts, flash floods and landslides leading to loss of life and unprecedented damage to property, especially in the upper mountainous parts including Broghil Valley of Tehsil Mastuj. Environmentalists connect these to rise in temperature due to deforestation, excessive grazing in the rangelands, and unsuitable utilization of wetlands resources. In the wake of such circumstances there is dire need of raising and maintaining awareness on the importance of mountain resources.

Keeping this in mind the PWP's Northern Alpine Wetlands Complex, or NAWC, organised



and implemented three different events in connection with International Mountain Day in District Chitral.

#### » Radio Adlibs

To highlight the importance of mountains and associated resources radio adlibs and slogans were broadcast for three consecutive days (December 9-11, 2009) from Radio Pakistan, Chitral Broadcasting House. The adlibs were prepared in Pashto, Khowar (Chitrali) and Urdu, and broadcast in respective programmes. On average five adlibs each in Khowar, Pashto and Urdu programmes were aired daily (15 adlibs/day of 20 minutes duration).

#### » Radio Discussion Programmes

A fifteen minute live radio discussion programme, entitled Significance of Mountains, was organised by NAWC through the technical assistance of Radio Pakistan Chitral. During the programme live questions of listeners were accommodated.

#### » Drawing competition for students of Broghil Valley

Broghil is located in the extreme north of District Chitral and is one of the demo areas of the Pakistan Wetlands Programme. To educate and sensitise the local communities, specifically the younger generation in environmental problems, a drawing / art competition was organised among the students of local schools in Broghil Valley. The competition was held at the centrally located Community Based School, Chilmarabad. In total 40 students participated in the competition. Ezzat Baig,

Patron Chiantar Welfare Society Broghil, was chief guest. Through their drawings and artwork the students highlighted



**Drawing Competition**

problems associated with mountains and their resources in Broghil Valley. Community Based School Chilmarabad stood first in the competition while Community Based Schools Garamchasma and Lashkargaz secured 2nd and 3rd positions respectively.

At the end the chief guest distributed prizes among the winners. In his address he highlighted the fact that mountains are like parents to us as they nourish us and provide resources to sustain us. Therefore, we must also take care of mountains and their resources and use these resources prudently. He thanked PWP for arranging the event in Broghil and assured his organisation's support for conservation efforts in the valley.



**Participants of International Mountain Day**

Umar Rafee, President Chiantar Welfare Society Broghil, Mr. Qurban, Kham Biay (teacher)

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and Mr. Habibullah (teacher) supervised the proceedings of the competition.

Banners carrying slogans and messages of International Mountain Day were displayed at various public places in Chitral City with the aim to create awareness among the general public.

### » Waterfowl Sport Hunters' Meet 2010

Karachi, April 9<sup>th</sup>, 2010: The Pakistan Wetlands Programme, together with WWF - Pakistan held the Pakistan Waterfowl Sport Hunters' Meet with the support of various stakeholders at the Karachi Gymkhana. The main partners were Sindh Wildlife Department, Pakistan Hunting Association, arms dealers, and Federation of Pakistan Chambers of Commerce and Industries. The Environment Journalists Forum, recently inducted by Pakistan's Prime Minister, was also actively involved in this seminar.

The purpose of the meeting was to bring together all stakeholders, including waterfowl sport hunters, to

agree on a resolution regulating waterfowl hunting in Pakistan. Nasir Malik, Coordinator Awareness-raising and Communications, PWP, made a speech in which he highlighted the significance of the seminar and how it would help conserve waterfowl and their habitats. The conference was chaired by Chief Guest Chief Justice Sindh High Court, Sarmad Jalal Osmany.

A documentary was shown on waterfowl in Pakistan, ethics of hunting and conservation of wetlands.

Various participants spoke on subjects such as the challenges faced by ethical hunters, and how waste draining into wetlands where waterfowl reside is affecting the water birds. There were suggestions to improve awareness as well as recommendations for the implementation of environmental laws. Then Col. Wasim shared his presentation about hunting ethics.

After that Dr Fahmida Firdous, Deputy Conservator from the

Sindh Wildlife Department gave information to the congregation about shooting rules and regulations and protected areas, as well as restrictions for sportsmen and how they can follow the principles of ethical hunting. Trophy hunting in Sindh was discussed. Dr Firdous also spoke of threats to the waterfowl population, hazardous new interventions, water pollution, and Sindh Wildlife conservation activities.

Then WWF - Pakistan wildlife photographer Ghulam Rasool showed his pictures and was applauded by the audience.

In the end the honourable Chief Guest, who is himself a keen sportsman, shared his efforts in



FPCI Chairman Sadeeq Shaikh

reviving the Wildlife Management Board. This will be a forum for looking after game management in a sustainable way and watching the interest of sportsmen. The Chief Justice said he appreciated the efforts made by the PWP team in organising a seminar to bring stakeholders together.



Chief Justice Sindh High Court addressing the participants



## Intern Corner

### “Marine turtle by-catch issues at Makran Coast, Gwadar”

Mortality of valuable marine life at the hands of the fishermen by accidental untargeted catching or “Bycatch” of the marine turtles is a genuine threat to their survival particularly in the Gwadar district of Balochistan. Many uncoordinated fishing practices in the area such as the commercial long-line fishing method, illegal trawling, Shrimp trawling with no TED device, gill netting (that uses plastic nets) and shark fishing with long-lines, ultimately leads to the Bycatch of sea turtles.

There are three basic types of by-catch interactions of marine turtles with long lines (a) Hooking: where the animal is stuck to the sharp hook (b) Entanglement in gill nets (c) Bycatch through shrimp trawlers. Turtles sometimes can also get tangled when swimming close to long-lines. The Long-line gear is a very popular fishing gear and most commonly uses hooks that are J-shaped which can harm sea turtles. There is no concept of the C-Shape hooks that are proven worldwide to be comparatively safe for sea turtles.

Approximately 5-10 turtles are caught as Bycatch each day and most of the fishermen kill the turtles to untangle their own fishing nets/Long-lines. The worst site for the Bycatch of sea turtles is the west bay of Gwadar which is a very famous fishing ground and where fibreglass fishing boats, wooden boats (kotial) and small haras also known as “katti” are used for traditional fishing which increases the chance for this type of deadly Bycatch.

Bycatch does not necessarily translate into mortality though, for example: an incidentally caught specimen such as a marine turtle or dolphin is often still alive when the gear is retrieved and this removal when cautiously handled can free the animal without causing it further injuries. In this way the mortality rate of this marine animal can be reduced and the chances of its survival would increase.

Further solutions to the marine turtle bycatch problem will be beneficial to both the marine turtles and the fishermen.

Parveen Abdul Rahim (BSc student)  
Intern, PWP,  
MCWC site office, Gwadar.

## » Technical innovation (“Coolstuff”)

### Tinytag Ultra 2 Dual Channel Temperature/Relative Humidity (- 25 to +85°C/0 to 95% RH) TGU-4500

The Pakistan Wetlands Programme, or PWP, has always endeavored to make use of state-of-the-art equipment for data collection and analysis. From the time of its inception, PWP has managed to identify and locate the most recent affordable equipment used worldwide, with the aim of enhancing research and to ensure the utmost accuracy and authenticity in its data collection techniques. In doing so it has exposed its technical staff and other relevant researchers to a wide array of knowledge and skills. This uplift of indigenous capacity was only possible through the introduction of new technologies that ensured sophistication and perfection.

Under the spotlight this month is seemingly simple, really tiny yellow toy-like datalogger called the Tinytag Ultra Dual Channel Tem/RH. This device is manufactured by GEMINI instruments, UK. It is a bi-sensor datalogger and is used for monitoring temperature and relative humidity. In the past and even today, several other standard methods are available for monitoring temperature and relative humidity like the hygrograph, thermograph, wet and dry thermometers and thermo-hygrometer, etc. The Tinytag ultra 2 has the same perfection or better, despite its tiny size. It is easy to operate and download. For cross testing we deployed our units in the Pakistan Meteorological Department Observatory and recorded variables. Tinytag is basically designed for indoor purposes and for outdoor monitoring, Stevenson's screens can be used for

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better results. The temperature and relative humidity data reading range from -25 oC to +85 oC and 95% respectively.

Among the several brands and models available, PWP has procured four units of Tinytag Ultra 2 for more specific measurement and easy handling. Besides being small sized and lightweight, Tinytag has been customized for profiling as well as unattended monitoring for weeks, months and even years depending on the required data resolution and energy source provided.

In addition it saves the hassle of

and so on. When the memory chip is full it stops recording measurement and you will need to transfer the data to a computer by simply connecting the device to a USB interface via a cable. The device has two red and green indicators which blink synchronously in the start, mid or end of the feed interval. The windows software, USB cable, RS232 PC cable and window to USB cable are provided with the unit by the manufacturer.

For people who crave such information, the features are given below:

Temperature and relative humidity recorder;

device via USB to a serial download cable. By opening the Tinytag explorer, a window will appear with menus and command icons. Expand the Logger's menu, click on 'launch', set the required parameters, time interval and absolute time for data acquisition. Here you will see a note how long the memory will last. Here you go! Your device is now ready to install. When you're done, connect the device to your computer, go to logger menu and click on 'STOP' then click on 'Get Data' and a graph will appear on your screen. You can adjust the graph and save it in different formats. For data display you have four views, table, graph, reading and min/mix view. The table view can be easily exported on to Excel for further manipulation.

#### » PWP's Intended

#### Applications of the Device

PWP in collaboration with Pakistan Meteorological Department intends to launch a couple of Hydro-meteorological Observatories in significant wetlands sites. Upon availability of such a high resolution data will then be incorporated and simulated by designated computer's infrastructure (modeling software) that will help us envisaging wetlands dynamics and climate change impacts.

Samiullah Khan,  
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putting graph paper and ink into a conventional thermo-hygrograph and regular monitoring. It saves time as it electronically takes the measurements and stores them in the device memory chip. The memory configuration may define and you will see the time limit to full the memory while customizing the data resolution

32,000 reading capacity;  
High accuracy;  
High reading resolution;  
Fast data offload;  
Low battery monitor;  
User-replaceable battery.

How does it work?

Install the Tinytag explorer software version 4.2 or above on your machine and connect the



## Articles

### Our very own carbon sinks

Pakistan is home to different types of wetlands including lakes and alpine peatlands. Little is known about the amount of organic matter stored in the soils of these ecosystems, which could be playing a large role in atmospheric carbon dioxide removal. The key aim of a research project I carried out was to find out how much soil organic matter there is above and below the water table in northern and southern wetlands and peatlands of Pakistan, so that we can find out what role they're playing in helping us breathe easy!

Eighty-four soil samples were taken above and below the water table. According to the results there is a significantly higher amount of organic matter under the water table than there is above. Even though most of the biomass is produced by surface peat moss, the amount of organic matter stored in layers below the water level is larger due to saturated water conditions. Compared to peatlands, organic matter in our northern lakes was lower averaging 41% and 44% in

surface and sub-surface sediments, respectively.

The amount of organic matter stored in northern lakes is about seven times larger than those stored in wetlands down the country. Although the growing season is significantly larger in southern wetland areas than in northern environments, the amount of organic matter stored in southern wetlands is low because of the higher temperatures. These results show that northern wetlands and peatlands are significant carbon sinks and any lowering of water level due to climate change or drainage for livestock grazing could result in loss of the stored organic matter. Result – more carbon dioxide in the atmosphere.

With global warming and climate change already happening in Pakistan, warmer temperatures are expected that may result in enhanced decomposition. Carbon dioxide concentration has already increased from 280 ppm in air to 380 ppm due to fossil fuel combustion, loss of forests and wetlands/peatlands.

With warmer temperatures this will further increase. This will in turn contribute to global warming, which will lead to more global warming...

Something has to be done now. The degrading peatlands in Gilgit-Baltistan should be focused on now, because rising temperatures will warm up the peat in the north and warm conditions will increase evaporation, resulting in significant water loss. With the future climate change scenarios in Pakistan, warmer climates with less rain will lower the water table. As the water table is lowered, more organic matter is expected to decompose.

This research has only established the role of soil temperature and moisture influencing organic matter accumulation rates. Much more work is needed to highlight the role of these wetlands in improving ecosystem functions.

Imran Ullah  
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### Biogas is the way...

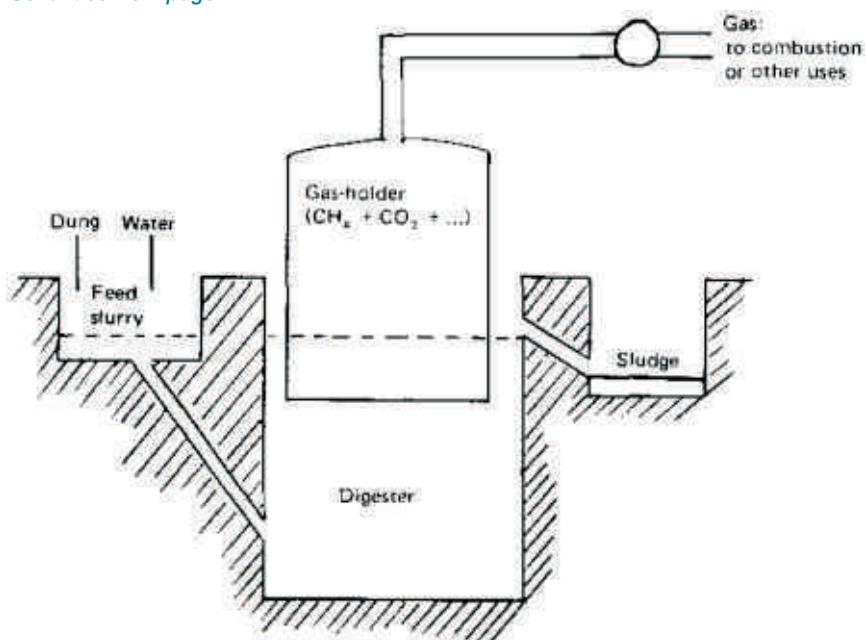
In poor rural communities of Pakistan, where trees exist, they are cut down and used for fuelwood. Plants in any form whether trees, shrubs or herbs are source of retaining water for infiltration through their roots to replenish underground water sources. Seepage water, springs, water channels, streams, lakes and rivers all depend on thick vegetation covering soil and binding its

particles together. Cutting of trees exposes soil to various factors that can cause its erosion and degradation. In these communities, deforestation has many facets and therefore is being carried out for reasons more economic in nature than simply getting fuelwood.

To stop deforestation and reduce use of forest plants there is need of actions that are

ecologically viable, socially acceptable and economically cost-effective. The Pakistan Wetlands Programme (PWP), while working on finding solutions to degradation of watersheds surrounding wetlands has tested many models that include alternate energy interventions. In collaboration with Pakistan Dairy Development Company, the

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PWP constructed its first biogas plant at Jhalar in Khushab District. This model, 8m<sup>3</sup> in size, has gained popularity among the local communities. This has provided a basis for replication, and local organizations have started replicating it on their own. This model has now grown to about a dozen in Soon Sakser Valley.

In rural communities livestock is common and a majority of households keep cattle for various purposes including getting milk, as draft animals, as ploughing bulls, and for transporting goods. They collect their dung and women usually make dung cakes that are burnt after drying. This is one of the major fuel sources.

Making of the dung cakes not only involves labour but also an exposure to pathogens that can cause several diseases. The burning of dung cakes not only releases carbon dioxide but also methane which could be a good fuel source. It is estimated that gases released from dung

contain 60% methane. PWP has worked on promotion of biogas plants in the forested valley of Soan Sakesar, to save trees and other plants from indiscriminate cutting.

The biogas plants are simple in operation. Each plant's three main parts consist of a feeder, where dung and water in equal proportion are fed; a digester where dung and water are retained until an anaerobic 'digestion' of dung takes place and methane is segregated from it; and an accumulator, where segregated gas collects and is supplied to a stove for burning. After digestion of the dung, slurry comes out through the outlet pipe from the digester. The slurry generated as a by-product contains 1.8-2.4% nitrogen (N<sub>2</sub>), 1.0-1.2% phosphorus (P<sub>2</sub>O<sub>5</sub>) 0.6-0.8% potassium (K<sub>2</sub>O) and 50-75% organic humus. This makes it a true organic fertilizer and a substitute for artificial fertilizer such as Di Ammonium Phosphate, or DAP. A farmer can save money from use of slurry, as he will no more need to

purchase fertiliser from the market. A small household-size biogas plant provides sufficient gas for daily working and heating needs.

A small family uses 2-3 medium sized trees a year on average to meet their cost of heating and cooking. If a family uses Liquip Prothane Cylinders, or LPG, the cost is about Rs.1,500 a month on average. A biogas plant not only saves them money, but protects watersheds by saving trees from cutting, and conserves wetlands by ensuring sustainable water flows.

Burning of fuelwood generates carbon laden smoke and causes indoor air pollution. This indoor air pollution results in health problems in those who inhale it for long periods. The health problems commonly observed include chest congestion, bronchitis, nasal congestion etc.

The biogas flame is smoke free. The cow dung contains about 60-65% methane that gives it a heating value of about 600 B.T.U. The natural gas has 80% methane with a heating value of around 1000 B.T.U. This is evidence that biogas has all the potential to be a good substitute for the gas piped out from the ground. The biogas potential and equivalence can be assessed from estimates that about 1.7 cubic metres of biogas equals one litre of gasoline and the manure produced by one cow in one year can be converted to methane which is the equivalent of over 200 litres of gasoline.

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## Raising Self Awareness

*“The activist is not the man who says the river is dirty. The activist is the man who cleans up the river.” (Ross Perot)*

Part of living a greener life, in my opinion, is also like educating others. I understand that just about everyone in this deprived world is aware of global warming, climate change and all the other environmental concerns. But we're not there yet; not even by a long shot.

Many people's attention is focused on paying the rent and putting food on the table. During what spare time they have, many prefer to be entertained by the media to try and forget their struggles and agonies for a short while. Well most of those surveyed admitted to having only a poor or pitiful knowledge of environmental issues especially when it comes to Wetlands.

When you're talking to someone about environmental concerns, don't take it for granted that he understand the basics of global warming or issues such as plastic in relation to oil - gauge a level of understanding first before getting into the ultra technical stuff or complex concepts.

The commemoration tomorrow is to deepen public participation

in the need to conserve and enhance the environment. It is also about promoting health that is getting increasingly dependent on environment. Without a healthy environment, our health will invariably be adversely affected, sooner or later.

An individual's environmental awareness transpires through participation, a personal desire to learn more, and a strong commitment to help ensure that future generations will enjoy a reasonable quality of life. Nobody is going to force anyone to learn more about our environment. The choices are simple: become conscious, or remain ignorant. The choice is always ours!

We must want to achieve a better understanding of the special relationship that exists between ourselves, our natural resources, and all other life form on earth, if we are ever going to become environmentally conscious. We are connected, we do make a difference, and this special relationship is one that we must not ignore. Once we recognize that we have environmental responsibilities, and we refuse to believe that our daily decisions don't make a difference, only then will we take our first steps

towards increasing our own level of environmental awareness. The process of increasing environmental awareness definitely requires proactive participation. We must practice!

### Modeling Good Behaviour

I describe a good and positive behaviour in this regard that is demonstrated by the individuals who recognize his or her civic responsibilities that include:

1. The responsibility to become conscious of our environment
2. The responsibility to make well-informed decisions that aim to reduce adverse environmental impacts
3. The realization to acknowledge the “right to exist” of all the living things
4. The responsibility to help protect and conserve our environment through proactive participation, including non-confrontational activism
5. The responsibility to practice foresight, conservation, philanthropy, and good citizenship

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## Appeal for **FLOOD** victims

Heavy rains, flash floods and landslides have caused extensive devastation in Pakistan. More than 1400 people have lost their lives and a large number of people (2.5 million) have become homeless and displaced. The number is increasing day by day. The whole infrastructure has been destroyed. The devastation is still going on therefore WWF appeals to help the flood victims, as outbreak of water-borne diseases emerged and destitute survivors sought refuge from the terrified torrents.

For more Information  
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### The Pakistan Wetlands Programme's Site Offices

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Phone: 0992-514410

**Central Indus Wetlands Complex**  
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near KAPCO power plant Kot Adu  
District Muzaffar Garh.  
Phone # 068-5002602

**Makran Coastal Wetlands Complex**  
Bungalow # M-74 Phase -1  
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**Salt Range Wetlands Complex**  
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Dhaka Road , Naushera,  
District Khushab.  
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