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Natura

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AN UNEXPECTED ENCOUNTER WITH A HIMALAYAN LYNX



Working to sustain the natural world for the benefit of people and wildlife.

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EDITORIAL

By Sana Ahmed

Going through a debilitating pandemic, we are all yearning for a reprieve, a breather to get out of this predicament. The pandemic, though, is far from over but with the situation getting better, we still need to be weary and circumspect of what might be lurking around the corner if we're not careful.

Recently, topics such as the environment, its protection and the need for immediate action to reduce land and sea pollution have gained prominence because the world has been forced to realise the impact of humanity's stamp on nature. We have to face the reality that when we meddle with nature it can unleash unfathomable catastrophes. It is about time that we realise there's a lot more that we can do.

In our toil for work and in our daily lives we forget how important it is to do our part in protecting our world and that the effort of each individual collectively amounts to whole a lot. Throughout history, humans have taken the world and its natural splendour for granted and have treated it as a resource to plunder, thinking that it has an unlimited replenishable capacity. We've been sadly mistaken and have gotten a wake-up call. This issue of Natura addresses such topics; from locusts attacks in Pakistan to the treatment of animals in a post-COVID world and how the pandemic has taught us to battle climate change, from the scarcity of water and how it can impact us to the adverse effects of piercing the pollution bubble.

The world is on the brink of changing, it is reaching a tipping point, which science has deemed very real and once crossed may be too hard to cope with. The question is will we listen in time and mend our ways? Will we be able to pay heed to the signs our planet is sending us?

Quarterly Magazine

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MANMADE HABITATS IN THE WILD - ANIMALS IN A POST-COVID WORLD

Hannah Tariq is the Founder and CEO of High Altitude Sustainability Pakistan and has over 15 years of experience in international development and social research.

In the wake of new safety concerns, zoos and sanctuaries have had to adopt strict new policies and extra precautions.

While COVID-19 is affecting national economies, businesses and non-profit organizations all over the world, animal habitats like wildlife sanctuaries, zoo-based conservation organizations, animal shelters, and traditional zoos are all also being adversely affected. They might be closed to the public, but behind closed doors, carers and vets are striving to look after their charges. The abrupt halt of income from visitors, unavailability of cash reserves to weather an unprecedented interruption, and high running costs are major problems for these organizations. Many are having trouble keeping their animals fed and paying salaries to the remaining staff. As Rebecca Blanchard, Media Manager, Zoological Society of London, London Zoo, says the staff has to continue working as,

“18,000 animals all need feeding and looking after every single day, no matter what’s happening in the rest of the world.”

In the wake of new safety concerns, zoos and sanctuaries have had to drastically adopt new policies and extra precautions. In April 2020, the Bronx Zoo confirmed that five tigers and three lions tested positive for the coronavirus, most likely from an asymptomatic zookeeper. Accordingly, the American Association of Zoos and Aquariums (AZA) updated zoos and sanctuaries about increased safety measures, including wearing masks and goggles to protect animals and keeping a distance of six feet whenever possible. The American Veterinary Medical Association (AVMA) issued similar guidelines to avoid transmission to animals. Around the world, only skeleton staff, and essential veterinary and animal care team members are operating in most animal homes.

In Pakistan, zoos are dealing with similar issues. Speaking of the Lahore Zoo, according to Badar Munir, Punjab Honorary Game Warden, “Government departments are taking serious notice, and all safety measures including maintaining a safe distance, using sanitizers, wearing masks, and suits are in place.” He also confirmed the testing of all staff that comes in close contact with animals (around 100 in the department). Additionally, animal behaviour and conditions are being closely monitored and



recorded in a log sheet, including temperature, behaviour, problems, food intake, etc. with protocols to isolate animals who may display changes.

Animal carers from around the world have made some interesting observations about changing behaviour patterns. Newfound privacy has also had some unexpected benefits for species propagation. In Ocean Park, Hong Kong, a resident panda, Ying Ying, finally mated after ten years when the park closed late January. In April, the Zoological Officer at Trinidad and Tobago's Emperor Valley Zoo reported that a 100-year-old South American river turtle nested and laid eggs on land due to reduced foot and road traffic near the zoo. One clear takeaway from these behaviour patterns is that guidelines must be developed by stakeholders to ensure consideration for animals in man made habitats. Codes of conduct on things as the restriction of noise in certain areas, for example, could be formulated and signed by patrons before entering parks.

It is also important to note that most animals in zoos have largely grown up in captivity and are accustomed to being around people. They're not wild animals in the conventional way as they have been raised in a different social environment and need interaction. It is not surprising that "quite a few animals get noticeably depressed in the winter months every year when we have fewer guests, and perk up in the spring when we get busy," notes an employee at the Rainforest Adventure Zoo, Tennessee.

The World Economic Forum reports that around the world, the

"most intelligent and social animals including gorillas, otters, and meerkats – are missing the attention of humans."

The crisis has consequently come at an "emotional cost for certain animals" according to zookeepers at the Berlin Zoo. One would expect all animals would thrive without human presence, but more social animals seem to be struggling. Zookeepers at The Rainforest Adventure Zoo in Tennessee observe that:

"for a lot of our animals, having the ability to interact with guests is extremely important. Even for primates to be able to play with kids through the glass, they are missing out on a lot of enrichment."

Koalas at Kangaroo Island Nature Reserve in Australia need the keepers to give them 'cuddles' as they are used to being picked up by visitors. Zookeepers at the Oakland Zoo report that

"the parrots miss the crowds. They love flirting with the guests, and now they're demanding a lot more attention from us."

At the Royev Ruchey Nature Park in Russia, carers have had to set up screens playing cartoons outside the cages of chimpanzees who were showing signs of depression. Jungle Island, Florida is providing orangutans with extra puzzles to fill the void of not having daily interactions with park guests.

Primary care, including feeding of dependent animals, has come under immense pressure in the wake of the coronavirus pandemic restrictions. While appealing for donations, Dartmoor Zoo, UK, disclosed that it cannot look after its 250 animals, some of which are endangered. According to the President of Oakland Zoo,

"It costs roughly US\$ 800,000 a year to feed the animals and US\$ 24 million a year to run the zoo. Finding that money, while attendance is zero, is a daunting task."

David Trigg, Liaison Officer at Fraser Coast Wildlife Sanctuary, revealed that staff and volunteers spent their US\$750 federal government stimulus payment on food for the animals and do not know if they can keep feeding the 300 animals. In other parts of the world more drastic measures are being considered. In April, the BBC reported that the administration at

Neumünster Zoo, Germany has been forced to consider euthanizing animals or make lists of animals to be slaughtered in order to feed others as a last resort. The non-profit Wolf Sanctuary of Pennsylvania, largely relying on revenues from visitors, has been closed since March 2020 and feeling the pinch. According to Michelle Mancini, Education Coordinator,

“Each wolf can eat up to five pounds of raw meat per day,”

costing thousands of dollars a week. The Philadelphia Zoo introduced a Spring Back Fund on its website to animal care and maintenance.

Newsweek reported that the life of wild animals on the fringes of urban areas during the early days of the pandemic and the subsequent lockdown improved around the world. Residents in many suburbs reported an increase in the number of sightings of wild animals, probably encouraged by the absence of pedestrians, traffic, and noise pollution.

More good news for wildlife has come in the form of the spotlight thrown on illegal and unregulated wildlife trade markets. Following the outbreak, poaching and illegal wildlife trade, identified by WWF as the second-largest direct threat to global biodiversity after habitat destruction has come under extreme fire. China has introduced a ban on the trade and consumption of wildlife to prevent future pandemics. A GlobeScan survey of 5,000 respondents from Hong Kong SAR, Japan, Myanmar, Thailand, and Vietnam, revealed that 93 per cent of respondents support actions by their governments to eliminate illegal and unregulated wildlife trade markets. Countries around the world are under similar pressure to adopt regulations.

However, some wild animals may be in considerable danger, according to Dr Hobaiter, who manages a Primate Research Programme in Uganda.

“We know that chimpanzees definitely, and probably all apes, are very vulnerable to coronavirus,” she informed gravely, adding, “We are quite worried that if this gets into the wild populations, we could lose thousands or hundreds of thousands of apes in the next six months.”



In Pakistan, snow leopard conservation efforts have been indirectly affected due to the economic slowdown in the US. The future of the Baltistan Wildlife Conservation and Development Organization’s (BWDCO) two-decades of successful work is in limbo because of the economic ramifications of the pandemic globally. Speaking to The News, Ghulam Muhammad, CEO, BWDCO, warned that this

“may prove detrimental for the conservation campaign.”

It is important to note that unlike conventional zoos, rescue centres care for abandoned, abused, rescued, or orphaned animals and must be supported in such times. More zoos will need to shift to this model to continue operations in an ethical manner once we step into a post-COVID-19 world. There are many tragic closures around the world due to a lack of funds, leaving a gap in rescued animal welfare. The Wildlife Waystation, a 43-year old wildlife sanctuary in Los Angeles, California, for example, was forced to close its doors recently due to an

“insurmountable need for funding to meet current standards.”

In addition to seeking donations, many zoos are testing alternate revenue streams. Scotland’s Edinburgh Zoo is fundraising via pre-purchased tickets and webcams of animals. Their audience has increased from 96,000 viewers to 400,000 since March last year. In Oakland, the zoo qualified for an eight-week loan as part of the Federal Paycheck Protection Program, which is enabling the zoo to maintain a full-time crew of keepers, veterinarians, and vet staff. But it still leaves them short. To help cover part of the remaining shortfall, the zoo launched a subscription-based Facebook feed, which offers viewers a behind-the-scenes look at the animals and staff. The association of French Zoos has already put in a request for a ‘Marshall Plan’, referring to the emergency financial initiatives put in place to relaunch the European economy after the Second World War.

Clearly conventional zoos have to evolve with better support systems for animals in need like sanctuaries and reserves. More needs to be done in accomodating and helping out animals now more than ever because the world needs empathy. We as people need to make sure we care for animals and there should be rescue and care centres that help all animals in need. ■



WHAT PAKISTAN CAN DO ONCE THE CORONA CRISIS IS OVER

Ayoub Hameedi is a policy analyst and the Founder/Operations Manager of Project Green Earth.



Ayoub Hameedi writes about clean energy production and phasing out fossil fuels for sustain economic growth in Pakistan.

The coronavirus crisis is now a familiar situation for all of us. Due to the lockdown, many of us work from home whilst others are not quite as fortunate to avail this privilege. The International Monetary Fund (IMF) referred to COVID-19 as “the worst economic crisis the world has experienced since the Great Depression.” Due to the negative impact of the pandemic, the economic situation in Pakistan might seem to be uncertain. However, with proper planning, implementation and follow-ups, the government can turn things around in a positive direction. It might not happen in a year or two but with grit, resilience and determination, Pakistan can regain the economic momentum in the span of a decade. Yes, it is possible for Pakistan!

According to the International Energy Agency (IEA), Pakistan produces a lion’s share of its total energy from oil and natural gas. Quite fortunately, the country is extremely rich when it comes to receiving ample sunshine and wind on a year-round basis. These renewable resources can easily produce 100 per cent clean electricity for the country and thus reduce its reliance on fossil fuels for electricity production. It is quite unfortunate that roughly one-fifth of the total population in Pakistan (i.e. 40 million people) lack access to electricity. Adding insult to injury, the rising circular debt in billions of dollars, poor transmission infrastructure and line losses causes black-outs for even those who have access to electricity. It halts and impedes the economic growth in the country and gives birth to a sharp rise in unemployment.

A rapid transition to 100 per cent clean sources of power production is a much-needed step for the government of Pakistan to solve the energy crisis and to guide the country towards energy independence. It must be appreciated that the government is increasing installed solar and wind power capacity in Pakistan. However, the pace of implementation is very slow. According to the Pakistan Economic Survey (2015 – 2016), various wind, solar and biofuel based clean power generation projects were completed in 2015. These projects then enhanced the cumulative installed capacity by another 438 megawatts. Fauji Fertilizer Energy Limited, Three Gorges First Wind Farm Private Limited, Quaid-i-Azam Solar Private Limited



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and Jamaldin Wali (JDW)-III are a few completed examples in this regard. According to the International Renewable Energy Agency (IRENA), India increased its installed wind power capacity from 10.9 gigawatts (in 2009) to 35.2 gigawatts (in 2018). Likewise, India enhanced its installed solar power capacity from 39 megawatts (in 2009) to over 27 gigawatts (in 2018) respectively. A lion's share of this installed solar power capacity (roughly 17.5 gigawatts) was added in 2017 and 2018 alone. Thus, altogether, India installed over 51 gigawatts of solar and wind power based electricity generation projects in the last 10 years. This is roughly twice the total installed power generation ability in Pakistan.

The government of Pakistan should prioritize solar and wind power technologies, once the coronavirus crisis is over and when life gets back to normal. A very important question that might arise is the correlation between the current pandemic and renewable energy. The answer is pretty simple. If Pakistan produced 100 per cent of its electricity from clean sources, it would slash the country's oil import bill by roughly half. The saved energy dollars could then be utilized to foster economic growth.

Norway and its pension fund is an excellent example for Pakistan in this regard. Norway discovered oil in the North Sea in 1969. A few years later, policymakers in the country recommended to the then government to save a certain percentage of the oil revenue for future generations. Fast forward to 1990, the Norwegian Parliament adopted its Government Pension Fund Act and set aside a certain percentage of its oil revenue in 1996. The purpose of this pension fund was to invest the assets in countries other than Norway. The total standing volume of the fund was US\$ 23 billion in 1998 that then exponentially grew to US\$ 372 billion in 2007. This was just the beginning of a momentum that would practically set an example for the rest of the world to follow. The financial standing of the Norwegian Pension Fund grew to US\$ 858 billion in 2014 followed by another exponential growth period that landed the total market value of the pension fund to a whopping US\$ 1,148 billion in 2019.

The government of Pakistan and Parliament can execute the same strategy to reduce its reliance on fossil fuels, slash its oil import bill by half and set aside saved energy dollars in a pension fund for future generations. Pakistan needs roughly 70 gigawatts of installed clean electricity generation ability to go 100 per cent renewable and to supply electricity to 40 million people who still live in darkness. This is possible for Pakistan provided the government makes it mandatory that every rooftop in the country has solar power panels installed on it. The government can also install mega wind farms in the coastal areas of Balochistan and Sindh.



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Likewise, it can kick start mega solar power parks with an installed capacity of multiple gigawatts in Balochistan, the largest province in terms of area and with the least population. Sindh, Punjab and Khyber Pakhtunkhwa can equally serve as an engine for solar power parks on a mega scale to help the country transition to clean energy in the coming decade. Apart from solar power parks and wind farms, the government can also turn all of the generated municipal solid waste into heat and electricity through installation of waste-to-energy power plants in the length and breadth of the country. Pakistan can easily have a cumulative installed capacity of 70 gigawatts with the help of solar power farms, wind parks and waste-to-energy power plants in the coming decade. It is extremely realistic, provided, proper resources and policy measures are taken in this direction.

Let's say, if the government of Pakistan sets aside US\$ 3 billion a year for the pension fund for future generations, it would mean a cumulative US\$ 30 billion in a span of a decade and US\$ 60 billion in 20 years. If the proposed pension fund grew by three per cent each year, it would mean an addition of a few more billion dollars to the original capital, since the total sum would grow continuously due to regular saving and returns for the coming 20 years. It is also equally important that we expand the export portfolio of Pakistan to maximize revenue and to reduce the budget deficit. An export of clean electricity to neighbouring countries is an excellent idea to increase revenue through exports. Forest-based tourism activities and provision of an excellent environment for startups in Pakistan is equally great too. Yes, there are countries across the globe that earn revenue in billions of dollars through the export of electricity, forest-based tourism and IT-based solutions to countries around the world. Sweden, New York State (in the USA), India and Germany are few examples in this regard.

The coronavirus pandemic has allowed all of us to spend more time with our families, to understand each other better and to realize things that we might not understand in ordinary circumstances. Now is the time to realize that it is the right of each citizen in Pakistan to have education, employment, healthcare services, job security and to receive a pension upon retirement. It is a wake-up call to realize the need for a strong pension fund for future generations that can be used to sustain economic growth in challenging times. Steering the economy of Pakistan towards clean sources of power production and the creation of a pension fund for future generations should have been done a decade ago. Nonetheless, now is the right time to rely completely on a clean source for electricity production, phase out fossil fuels and create a pension fund that could sustain economic growth in Pakistan, just in case such a crisis were to reoccur in the future. ■

BIRDS: THE ANTI-LOCUST SQUAD

Muhammad Niaz is Divisional Forest Officer Wildlife at the Wildlife Department, Peshawar and is an animal enthusiast.

Only recently, the scourge of locust infestation plagued farmers in arid and semi-arid areas around the country with swarms of locusts descending onto fields of crops and destroying swathes of farmland in their wake.

In the grand scheme of things, the significance of birds, animals, insects and microorganisms in soil cannot be overlooked in maintaining the natural balance by virtue of their ecological and socio-economic role. Just as the vast and complex mechanisms of the human body are performing their functions, so are these beings.

Birds and insects serve as biological control agents to safeguard crops and vegetation in the context of agriculture. However, due to altered agricultural landscapes and increased manmade practices, the need to rely on natural biological control agents is the last resort in the contemporary agricultural system. Habitat loss, illegal hunting of avian species and degradation of land in the loss of complex landscape structures in different ecozones between farmland and other ecosystems as well as the increased use of agrochemicals have been linked to the reduction in species richness in agricultural areas. Loss of avian diversity subsequently has had a somewhat disastrous effect on crops and plant species.

Only recently, the scourge of locust infestation plagued farmers in arid and semi-arid areas around the country with swarms of locusts descending on fields of crops and destroying swathes of farmland in their wake. This can be attributed to the loss of their predator species including birds, lizards, spiders and desert foxes, which are active biological agents in controlling pest populations. Desert locusts, which are generally known as grasshoppers, are devastating pests that cause massive financial losses and significantly hamper agricultural produce. A swarm of locusts may consist of billions with as many as 80 million per square kilometre. The availability of a suitable environment such as a wet winter and the lack of frontline predators triggered an unprecedented increase in their population, which has rendered huge losses to the agricultural sector.

Locusts thrive on vegetative matter and their swarms significantly affect and devour vast extents of crops, orchards and plantations with severe socio-economic

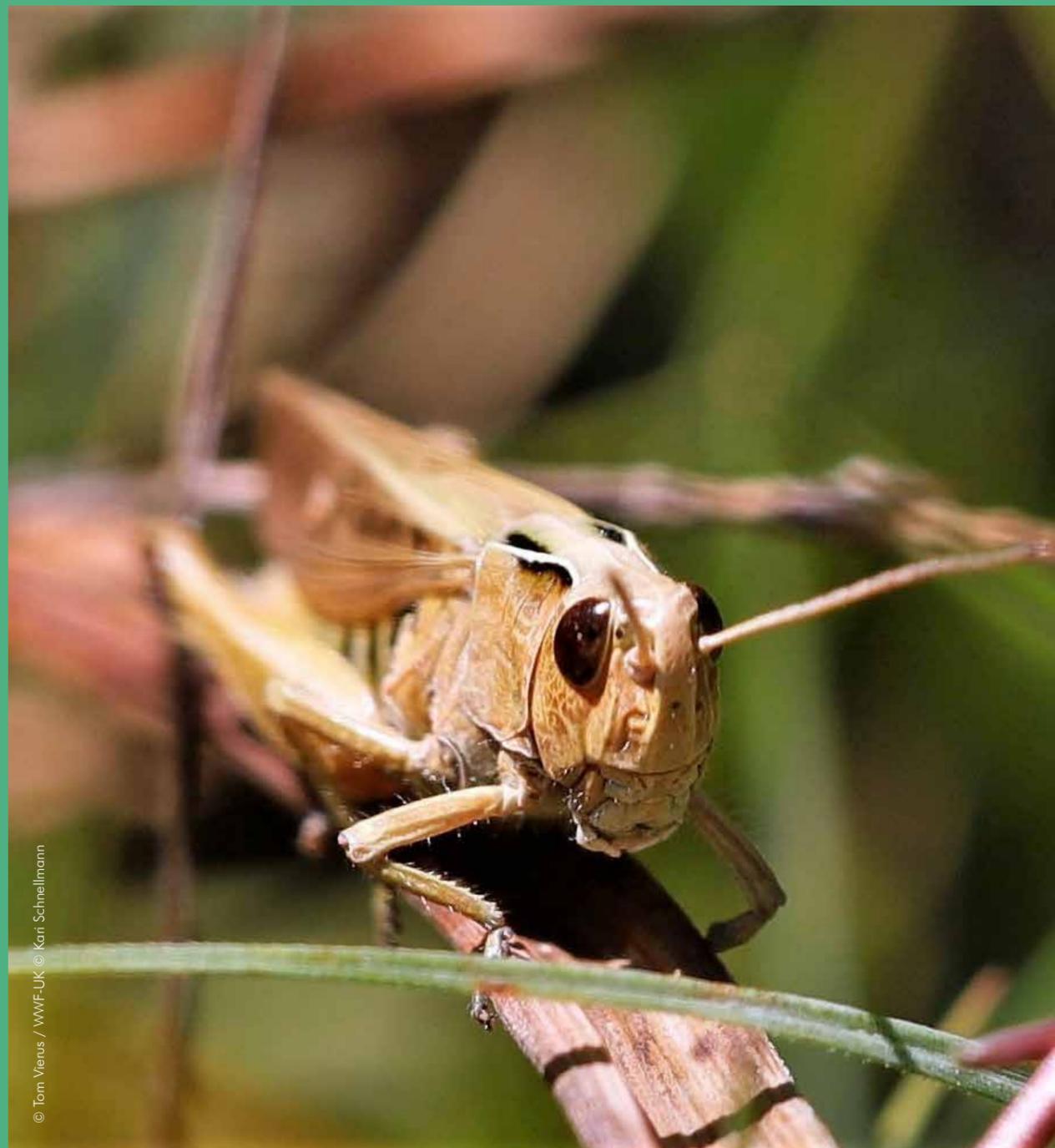
ramifications. Recent attacks in Balochistan, Sindh, Punjab and Khyber Pakhtunkhwa have inflicted tremendous damage to crops and large scale monetary losses in the agriculture sector, undermining food security in the region. Climate change is also a contributing factor for such invasions while the dwindling population of their predators has also been observed to be a major cause of concern among conservationists.

Dwindling avian diversity in the wild, in the wake of illegal hunting and trapping, has been one of the factors along with climate change, heavy rains during breeding seasons of locusts, etc affecting the reduced natural predation of locusts. Birds mostly consume green matter like seeds and insects, therefore, there is good reason to believe that birds are potential biological agents to check the growth of locusts in an area. With a dwindling population of birds, locust attacks prevail with greater intensity. Every year thousands of birds are illegally killed, weakening the resilience of the ecosystem because of infestations such as those witnessed recently.

It has been observed by many farmers that mice are eradicated through the use of pesticides in the fields, but this practice comes at a price where non-harmful insects are also impacted and killed. This practice has a dire consequence, which can eliminate bird species like kites, hawks and crows that feed on them and control pest growth in a natural way without any side effects on the agricultural ecosystem. With the use of pesticides and new agricultural methods, the ecosystem and food chains have also witnessed a shift as there are many birds that have a herbivorous diet.

Moreover, partridges like the grey partridge and black partridge; quails, sparrows and other birds like starlings are beneficial to the crop yield as they consume the bulk of harmful insects naturally. Young chicks eat mostly insects and prefer farmlands as a suitable habitat.

It is interesting to point out the cost-benefit ratio of bio-control programmes with the application and use of fertilizers. The annual worldwide expenditure for nitrogen fertilizer exceeds US\$ 20 billion. Biological control proves to be very successful economically even when the method



has been less successful.

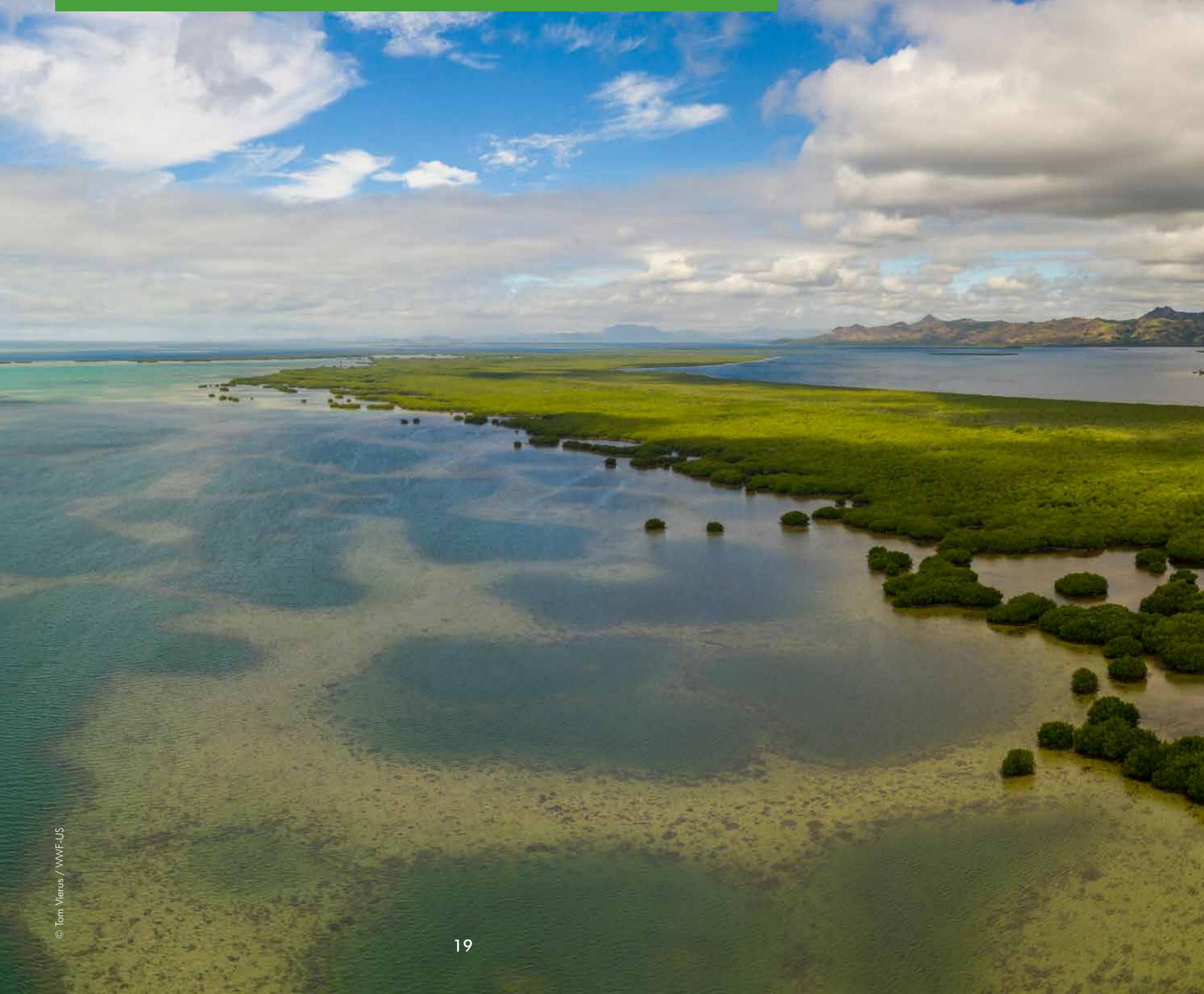
Agricultural landscapes serve as a habitat for many wildlife species and the richness of these species is affected by areas such as cropped and uncropped land, wetlands, ponds and pastures. Proper management and consideration of these areas would ensure the preservation, restoration and benefit of wildlife species for better crop production as well as socio-economic development. This will help biological agents control pests at their larval stage.

As the natural world suffers in the wake of unsustainable utilization of natural resources in this era of technological development, events like the infestation of locusts may be better termed as nature's revenge for human activity that is adversely shaping our ecological future at the cost of deteriorating biodiversity. In fact, the human footprint on the environment is increasing at a surging pace, which ultimately strikes back in the form of epidemics, infestations, floods and climate change with severe health and economic impacts that threaten the survival of biodiversity and food security in the long run.

Moreover, to ensure the prevalence of vital ecosystem services, it is imperative that biodiversity of an area remains unthreatened in the face of anthropogenic activities such as illegal hunting of avian diversity and wildlife, unsustainable agriculture and expansion of urbanization and industrialization into areas inhabited by wildlife. Sustainability of natural resources is vital for a healthy environment and its development and we should all play our part in conserving nature and protecting not only our country but the world. ■

WHERE HAS THE PARIS OF ASIA GONE?

Hajra Mahmood is an M.Phil student at the Department of International Relations, University of Karachi and teaches sociology at Habib Girls Higher Secondary School.



The city may be one of the largest in the world but the infrastructure running in the city is deteriorating and showing signs of degradation. With effective measures and political grit, the city can regain its lost glory.

The Paris of Asia, this was a title once given to Pakistan's largest city Karachi during the British Raj. With its greenery, pristine beaches and cleanliness, the city was a sight to behold. After independence, the city became the capital of the newly born state of Pakistan. During this era, the population started increasing and it became the economic centre of the country.

"Karachi is the city of dreams and opportunities" is a slogan that has been a belief of all the people in Pakistan. As the seventh-largest *urban area* of the world, it always held international prominence. The city has been the hub of migrants from not only India but Bangladesh, refugees from Afghanistan and internally displaced people that have made the city overpopulated and because of the influx the city limits have expanded without prior planning. Urban planning in Karachi has been neglected and never properly implemented due to political laxity of the government. Solid waste management is a man-made problem, which has been neglected for far too long in Karachi and whose effects are now palpable. The root cause of the issue is not the capability of workers or the system but administrative and management issues as instability at the administrative level has damaged not only institutions but the city as well.

The city had four master plans for its structure and maintenance and only one of them included details to counter the solid waste problem of the city; Karachi Plan 2020. The Master Plan 2020 is a comprehensive and detailed culmination of the hard work of the city Nazim (of the time) and his team that not only shows the clarity of ideas, aims and objectives of the plan but it also studies the previous three Karachi plans, what problems they faced and how the current government or coming governments are going to tackle the problem of solid waste. Moreover, it discusses that an urban city like Karachi requires more landfill sites than the two it already has, Jam Chokro and Gondpass. Until now Karachi has lagged behind in achieving its target and has regressed from where it was 10 years ago.

Karachi used to produce 2,000 tonnes of solid waste per day before 1974, which rose to 6,000 tonnes per day in 2001 as per the Urban Resource Centre (URC), which later increased to 9,000 tonnes per day in 2005 and is predicted to reach 20,000 tonnes per day in 2020. Multiple factors have played a role in contributing to the surging growth of waste in Karachi. Overpopulation is one of the major factors in increasing the problem. The influx of people from rural areas to urban centres like Karachi, the war on terror, the Afghan refugees entering Karachi, has exacerbated the problem of waste and pollution. With the inflow of migrants and people seeking opportunities in metropolitan hubs of the country, the planning of settlement and land use was lacking, which provided the base for misuse of resources and poor solid waste management. In addition to that, the population living in katchi abadis (shanty towns) do not have the facilities to have their solid waste collected hence they dispose it in drains, streets or in open plots. The sudden growth of fast-food restaurants in the recent decade is another factor for the increase in garbage disposal issues. The waste produced by restaurants and their buyers both contribute to this. Small scale restaurants mostly don't follow relevant policies on hygiene and health, which results in them throwing garbage on the roadside.

Today, waste management is worse than ever in Karachi as bridges, roads and localities all are swathed in waste and garbage. The Sindh Solid Waste Management Board (SSWMB) was formed in 2014 under the Act of Sindh Assembly 2014 to manage and control the refusal system properly. Previously, Karachi's solid waste system came under the Karachi Metropolitan Corporation (KMC) and 13 other districts but now the areas, which came under KMC have been transferred to SSWMB.

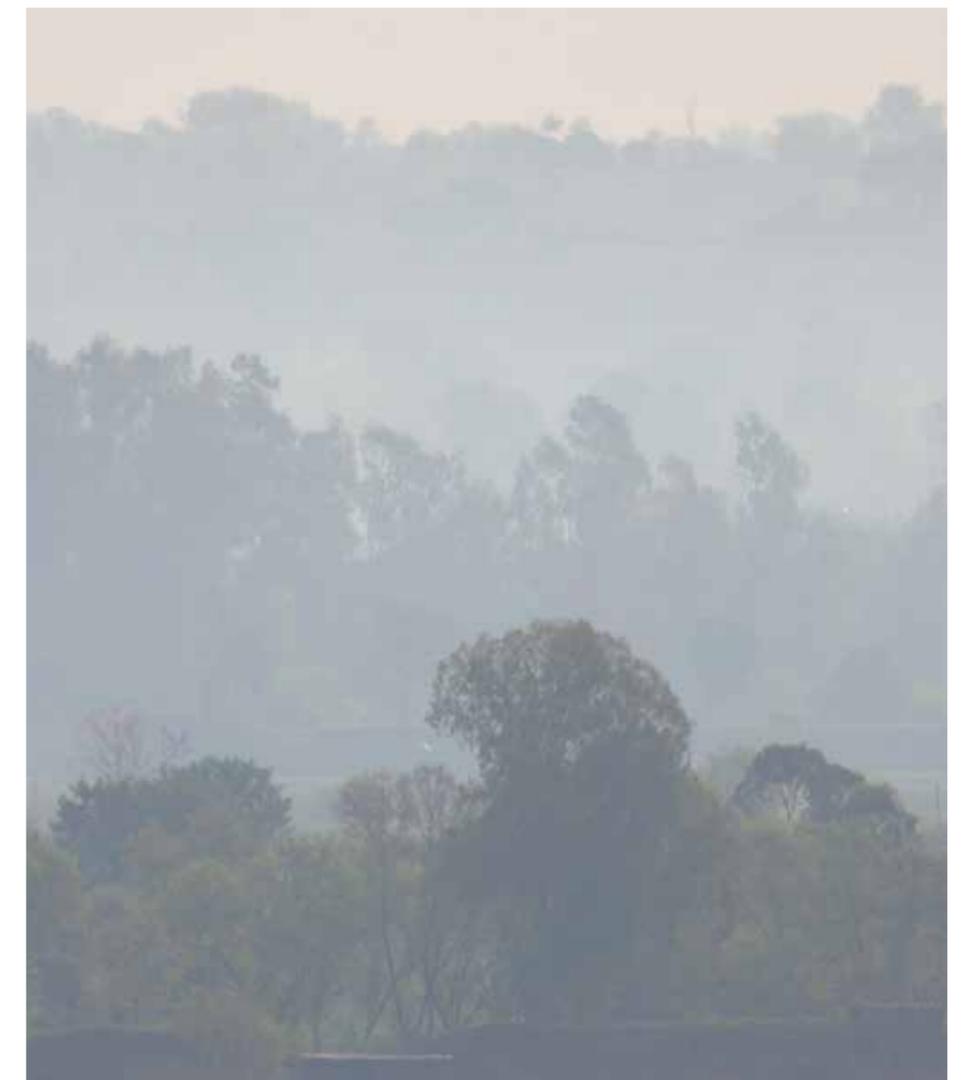
According to the Director of Operations, SSWMB, Karachi, the city now has 12 Garbage Transfer Stations (GTS) with five operative ones in EMB Cosway (District East), Sharafi Goth (District Malir), Baldia (District West), Kasba (District West) and Dhobi Gaath (District South). From 12 of these stations, four will utilise the collected waste to produce electricity in the near future. According to the Secretary of SSWMB, 80 per cent of garbage is collected from the ground and dumped into the stations, which later on at night is transferred to landfill sites.

He also explained that currently three Executive Directors oversee the Sindh solid waste system. They also plan to use scientific methods in two current landfill sites whose work on boundary walls has started. To balance the growing waste, a 3,000-acre landfill site, called Dhabeji, has been bought to mitigate the pollution level in the city.



However, in the last nine years, Karachi has seen more refuse (waste) on roads, under bridges and in more localities than ever. Open dumping of garbage is now common and lifting of waste on a regular basis is not carried out systematically. This has led to citizens burning solid waste, which causes air pollution producing carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxide (NO). The practice of burning garbage has led to the deteriorating air quality of Karachi amidst the existing problems. The recent urban flooding in Karachi shows how drains are choked with garbage and illegal construction near nullahs has destroyed the city's drainage system.

The city may be one of the largest in the world but its infrastructure is deteriorating and showing signs of degradation. With effective measures and political grit, the city can regain its lost glory and retain the name 'Paris of Asia'. But serious and continuous efforts will be needed to rebuild the structure and maintenance of the city. Its people have shown over and over again that with political will they stand united to make Karachi great again and hope to do so in future. ■



PIERCING THE POLLUTION BUBBLE

Izmerai Durrani is Chief Executive at Delive Tree and Executive Producer at STP Films

Our world is changing at an unprecedented rate and humanity's stamp on the natural world has shown that globalization, advances in technology, industrialization and growth of urban centres and cities, the health of the earth is at stake.

Let's get some perspective. The world we live in today has rapidly transformed into a global community of collectives, organizations, multinationals, and individual influencers. A globalized community has the tendency to become intrinsically interconnected, which for the most part we are. With the advance in technology, medicine and living standards throughout the world and increased globalization, humanity has benefited tremendously as compared to the past, leading to an increase in population. On a macro scale, the world human population has been growing significantly. The fastest growth of humans was in the last 100 years when the population increased from 1.65 billion in 1900 to a whopping 7.8 billion today, a seven-fold increase since then. Today in 2020, 55 per cent of the world's population lives in urban areas, a proportion that is expected to increase to around 80 per cent by 2050. Projections show that urbanization, the gradual shift in the residence of human population from rural to urban areas, combined with the overall growth of the world's population could add another seven billion humans globally by 2050. That's around 14 billion humans in thirty years.

In 1970, there were only three mega-cities across the globe, but by the year 2000, the number had risen to 17 and by 2030, 24 more mega-cities will be added. For context, a mega-city is defined as a city of considerable size and scale with a population exceeding 10 million inhabitants. Tokyo, Japan is currently the largest 'megacity' in the world with 37.4 million inhabitants and the number of these urban centres are expected to rise as people cluster and gravitate more towards urban areas around the world. By 2030 to 2040 a projection of 43 mega-cities is estimated. Today, the most urbanised regions include Northern America (with 82 per cent of its population living in urban areas in 2018), Latin America and the Caribbean (81 per cent), Europe (74 per cent) and Oceania (68 per cent). The level of urbanisation in Asia is now approximating (50 per cent). In contrast, Africa remains mostly rural, with only 43 per cent of its population living in urban areas. The highest population demographics are

found in China, India, USA, Indonesia and Pakistan. In Pakistan alone, the daily birth rate is 10,000 births per day, that's 400,000 plus births annually and the trend is growing every year. This overview of the growing human population gives us a glimpse of the challenges we are facing and are poised for in the future.

Taking the example of a globalised and interconnected community, large forest areas have been cut down to make way for urbanisation and farming land. Industrial fishing is leading to the depletion of a number of species of marine life, pollutants from industries make their way into the air, landfills and water bodies are impacting the environment significantly. Harmful emissions have chewed out holes in parts of the ozone layer, raised global greenhouse gas emissions and air quality levels causing the polar caps to melt and breakaway at alarming rates. Melting polar caps will cause new viruses to be unleashed into our diversity charts. The demand for coal, although reduced in first world countries, has spiked in developing nations, as have rare earth metals and lithium. Lithium is used to create lithium-ion batteries, used to power every electronic device imaginable. The demand for lithium has put Afghanistan and Bolivia, two of the most economically and environmentally vulnerable countries, which retain the largest reserves of this precious metal, where the majority of the people, live on less than a dollar a day, in an increasingly precarious situation.

The world has been on a consistent overdrive to churn out superlatives *the best, the fastest, the tallest, the longest* but to what end? Every year these are then updated. Superlatives in the present environment have become the norm, as a result, we the people are now desensitised to this jargon. The way we describe the present and potential future to our new audience has to be rethought. Only by looking at the whole can we identify, better address and possibly arrive at the way forward for seemingly individual issues.

How has the environment benefited with humanity on lockdown?

The top most polluted cities in the world for air quality were Shanghai, Dhaka, Delhi, Mumbai, Seoul, Wuhan, Karachi and Lahore respectively.



The World Health Organization reports the air in Pakistan has an annual average of 60 micrograms per cubic meter of PM2.5 particles. That is four times the safe levels recommended by the National Environmental Protection Agency (NEPA). Poor air quality may result in serious health effects, aggravating lung and heart diseases, and causing respiratory diseases in the general population. Globally, air pollution is already a public health crisis, as it kills seven million people each year. Deforestation and vehicular and industrial emissions contribute to the hazardous Air Quality Index (AQI) levels.

Lockdowns around the world contributed to a tangible, short-term change. Taking 10 to 25 million people and their vehicles in each city (plus districts) with a considerable percentage of the global population off the streets, shutting thousands of factories etc was bound to have an impact on the environment. The worst affected cities in the world experienced significant improvements in air quality. Lahore and Karachi, cities with high levels of PM2.5 particulate pollution, had the most significant drop in air pollution levels. The local air quality index dropped from hazardous (AQI 450) and very unhealthy (AQI 300) to below moderate (AQI 100) and to good (AQI 50 and less).

Sustaining a healthier tomorrow

Lockdowns, keeping people indoors, banning vehicles from roads and totally stopping factories from production are not feasible ways to reverse climate change; there are alternative avenues to conserve the environment and maintain a healthier air quality.

The public and private sector should work on green deals in the form of government stimulus packages. Recently Kristalina Georgieva, Managing Director, International Monetary Fund (IMF) stated that a pandemic stimulus must focus on tackling the climate crisis. Green incentives could include green bonds and other forms of sustainable finance. The IMF estimates that a low carbon transition would require US\$ 2.3 trillion in investment every year for a decade. Massive fiscal stimulus measures adopted by governments around the world to combat the coronavirus could be tailored to tackle climate change at the same time. Governments can focus on fiscal spending to promote green technologies, clean transport, sustainable agriculture and climate resilience.

We should opt and lobby for greener modes of transportation, and secure subsidies for trading in legacy vehicles for electric vehicles (EVs). We should also move towards adopting sources of sustainable energy for power generation i.e. solar and wind. This further includes water conservation via rainwater harvesting and collection. Additionally, we can create rainwater pits that recharge bore-wells and replenish the water table. Commercial and residential solutions are now readily available to be integrated into urban and rural structures and units.

Population control in the form of family planning and education needs to be given due importance by the government. Only a well-informed population will make better decisions. Lastly, we should focus on creating urban green spaces, botanical gardens and oxygen pockets in and around cities by planting more indigenous and local species of trees and plants. This will greatly impact and help reduce pollutants in the air and make the environment healthier for the population and for generations to come. ■

THE WATER WAR PREDICTION

Maheen Ahmed works at a policy-based thinktank in Islamabad and contributes articles to The Express Tribune.

The more worrying point of contention is not whether water will be used as a weapon of choice, but rather, how much water will there be for us, to begin with.

One of the most widely cited assertions in the contemporary era comes from Ismail Serageldin, the former Vice President of the World Bank when he predicted in the mid-1990s that all the wars of the new millennium would be fought over water.

Perhaps it would not be a disservice to history to suggest that nations, while surely having prospered because of water, also bore ineluctable conflict because of it all the same. This most precious resource on the planet has undoubtedly been the bane for many of these civilizations, by no means as fleeting as their time in existence. The example of two Mesopotamian city-states is the case in point wherein the King of Lagash diverted water towards his boundary canals and successfully deprived Umma, the neighbouring region in the North West of Babylonia, from its water supply. Such a tale is marked in history as one of oldest recorded examples of a water conflict and has gone on to serve as a woeful precedent, of conflict borne out of dire need of water for survival. During the course of the succeeding centuries, industry-led growth, agricultural demands, and exponential population growth only increased man's dependence on water. Water became scarce and with it, conflict ensued. In fact, since the Babylonian conflict, the world has witnessed over two hundred similar recorded instances. Given that 286 water basins cross international boundaries, accounting for nearly half of the Earth's land area, it is no wonder that nations throughout history have come at odds with one another whilst sharing their water resources.

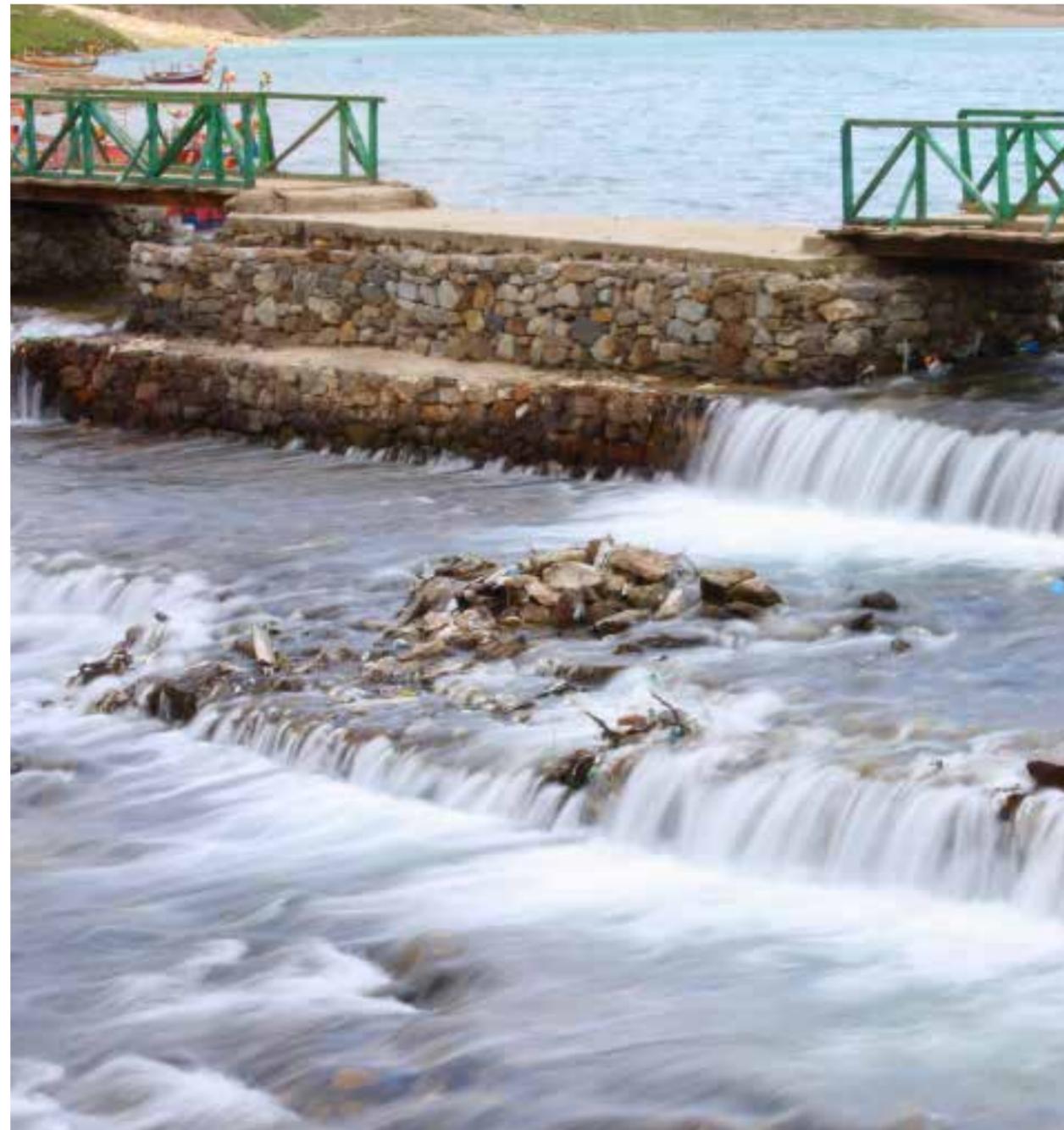
Perhaps then, it was not completely unconventional for Ismail Serageldin to suggest the notion of water wars. As such, a considerable amount of international attention, a plethora of academic disquisitions and several bilateral as well as multilateral diplomatic initiatives have belaboured the risk and danger of a water conflict. Just recently, the Water, Peace and Security Partnership (WPS) launched a ground-breaking tool to predict the risk of violent conflicts. The mechanism, using farmer protests as a measure for the onset of a period of water scarcity, predicted the inevitability of a water conflict between Pakistan and India.

Concern over water wars have gained renewed traction as the world inches closer to a population totalling ten billion persons. Analysts caution that owing to climate change and increasingly polluted waterways, the world will witness a more acute water crisis, triggering social unrest and mass migration. Water risks, inclusive of, but not exclusive to droughts and floods, which as of late have been exacerbated by climate change, have been posed as threat multipliers, contributing to famine and displacement, while also serving as catalysts for conflict.

However, even confronted with the gravity of the threat faced, a closer look will reveal that water-borne geopolitical disputes are as likely to be resolved as they are to escalate, if not more so. In fact, water-sharing agreements have traditionally been diplomatic successes, around the positive-sum criteria that ensures development and human prosperity. Studies reveal that nations have been more inclined towards cooperation over freshwater resources than towards conflict, which is demonstrable through an excess of 3,600 cross-border treaties between countries that share international waters.

Focusing solely on the risks of transboundary water conflicts undermines a more omnipotent threat. The more worrying point of contention is not whether water will be used as a weapon of choice, but rather, how much water will there be for us, to begin with. As per a global risks report, water scarcity is one of the world's ten gravest risks. As it is, a quarter of the world's population lives in extremely water-stressed areas, which means the lives of nearly one billion people stand to be impacted due to water scarcity by 2025.

This does not paint a rosy picture for a water-scarce country like Pakistan, which sits with a water availability level falling below 1,000 cubic metres per person. One would consider this ironic because Pakistan has been naturally endowed with one of the largest irrigation systems in the world, the Indus River system. It is blessed with waters that flow from the Himalayas to the Arabian Sea and a climate that brings monsoon rains seasonally. However, the Indus Water Basin has already been marked as one of the most stressed basins of the world. With an exponential population growth and increased demand for agricultural, commercial, and domestic use, there



is an additional burden on Pakistan, like other countries, to provide an adequate supply of water. Subsequently, Pakistan has been unable to prudently manage its water resources. Add declining storage capacity, falling water tables, ageing infrastructure, uneconomic cropping patterns, rapid urbanization, growing industrial demand, inadequate laws for water usage and reuse, and water contamination to Pakistan's water woes. Ranked as the fifth most vulnerable country to climate change, Pakistan has experienced a number of floods and long spells of droughts in recent years, which will only further complicate its water troubles. While the rain pattern in Pakistan is of high magnitude, it is of low frequency, which means rain may be insufficient to raise the groundwater level and increased temperatures will increase glacier melt and evaporation rates. The water quantity will not only decline but will also become erratic.

It is important to note and to drive home the narrative that water scarcity is not merely borne out of geopolitical conflict, but is aggravated by various issues including climate change and mismanagement of water resources. Changing the narrative on water security is important, because only then can one move away from thinking of water as a source of conflict, and recognize it as a tool for cooperation instead.

Despite the post-apocalyptic and sensational headlines of water wars, the future of water wars still remains unclear. Thankfully, predictions have not come true yet. Looking to the future, attention ought to be redrawn to address the world's more urgent water challenges. Investment and expertise could be better harnessed to focus on water management, such as effectively providing clean water to areas where it is unavailable and ensuring more sustainable water use.

Perhaps it is time to finally focus on water management as a potential solution to the problem. ■

THE ESSENCE OF QURBANI

Sarah Khan is the CEO of FM91 and Director of Business Development at Digital HeadQuarters, Interflow Group of Companies.



While I prescribe to the act of sacrifice, in countries like Pakistan, the welfare of animals is often overlooked and egregiously neglected.

As a child, I used to watch qurbani, the sacred ritual of sacrifice, with fascination through innocent eyes, ignorant of the pain and trauma felt by the animal on the verge of being slaughtered. I have vivid memories of the creature hanging upside down by its hooves, a deathly blade sliding across the suspended animal's throat; its eyes bulging as it realizes its fate.

Today, I cannot bear witness to the act of qurbani and do not wish to subject my children to it either. My heart ached when my five-year-old daughter cried at the loss of our neighbour's goat; a sight she may never forget as she happened to catch a glimpse through our window overlooking the Eid sacrifice.

The purpose of qurbani and the ideology behind it is about learning to make a great sacrifice for one's belief while feeding the poorest members of society. While I prescribe to the act of sacrifice, in countries like Pakistan, the welfare of animals is often overlooked and egregiously neglected. The way they are bred, herded and slaughtered is often cruel and inhumane. Ultimately, the Eid qurbani has become a show of status and wealth and the animal in question, collateral damage.

Our forefathers lived very closely with animals and sacrificing livestock that they raised from birth held real meaning for them. Today, most Muslims live in urban towns and their contact with qurbani animals is limited to days before the sacrifice. A vast majority of our Muslim brethren are unaware that there is a *halal* way to perform qurbani, which starts from knowing how the animal is raised to ensuring that once purchased the animal is treated humanely and according to hadith one must create a loving bond with the animal. Finally, there is a religiously prescribed method for the actual slaughter, which mentions that the blade used must be sharpened to the point that the animal feels no pain. More importantly if one cannot afford (or chooses not to partake due to unavoidable reason) one can distribute meat or can educate an underprivileged child.

In today's Pakistan, animal markets are crowded and unhygienic; there is no regulation on how the animals are transported, kept or handled before or after purchase and



no legal way to ensure that the butchers hired are trained properly to slaughter in the halal way. As per the teaching of some religious leaders, unless an animal has been kept and treated well, the sacrifice of such animals is not acceptable:

“If animals have been subjected to cruelties in their breeding, transport, slaughter and general welfare, meat from them is considered impure and unlawful to eat.” — The late Imam B.A. Hafiz al-Masri (Woking, UK)

Unfortunately, there is no real discourse on qurbani and animal welfare in Pakistan. Cultural relativity is important as one must not judge the customs and beliefs of others - but it can be noted that the government should intervene to an extent and try and implement systems to make the process better. They need to look into the conditions where breeding takes place as well as regulate the transport of livestock; regularly check the sanitation and state of the markets and disseminate information to the masses about the treatment of animals as well as correct and halal methods for slaughter and post-purchase activities.

Animal rights and welfare has very strong and specific advice from the Quran and Hadith. According to both, even the smallest change in one’s attitude towards an animal can be a fine line between a good deed and a sin. To recognize this would be a huge step in the right direction for a country that wishes to maintain its cultural and religious practices, while also caring for the animals who make it all possible. ■



HOW COVID-19 HAS TAUGHT US TO BATTLE CLIMATE CHANGE

Ramsha Nadeem works as Project Coordinator at Greenbox, a youth driven engagement lab nurturing sustainability leadership in Pakistan.

COVID-19 and climate change are two very different threats, but they share a common ground. They are both global issues and do not respect boundaries.

The outbreak of coronavirus shocked the world and brought with it a pandemonium of unpredictable and unprecedented changes. The virus has infected over 25.1 million people and taken the lives of over 884,000 people worldwide since it first appeared in China's Wuhan province. The pandemic has forced policymakers to strike a balance between public safety, ensuring economic stability and development goals. As the pandemic surged, it not only resulted in the economic destabilization of most countries but the deterioration of health systems, which caused widespread and wanton death resulting in countries going into lockdown.

In the case of Pakistan, the aura of doom, gloom and fear remained prevalent as COVID-19 cases soared in June 2020. Since the beginning of the epidemic, 13 and 19 June experienced the highest number of new infections as cases rose to 6,895 and 4,994. Hospitals were swarming with patients, incidents of oxygen shortages and medical supplies were common and anxious talk about stories of friends and family who had tested positive added to the panic. In some instances, whole families were affected and it was a struggle to find rooms in hospitals as they were overcrowded. Despite the unparalleled steps taken by governments and international institutions around the world, it still left some of us worrying about another immediate global problem, climate change.

COVID-19 and climate change are two very different threats, but they share a common ground. They are both global issues and do not respect boundaries. Therefore, they require countries working in consort with each other to come up with solutions. The pandemic has shown how critical it is to be ready when a crisis strikes. It has also shown us the consequences of delaying timely action and the magnitude of its aftermath. We are even less capable and ill equipped to address the ongoing and rising threats, such as climate change, biodiversity disruption, environmental damage at the behest of mankind's progress, ocean acidification, pollution, etc as we were for the COVID-19 crisis. Climate change is affecting the world in multiple ways and while these changes might not be noticeable or tangible for some of us, they are still taking place. Any threshold, whether it is the concentration



of greenhouse gases, loss of insect species or melting glacial ice, may also make the changes irreversible once we cross the tipping point. And since we do not receive regular updates on the casualty count caused by climate change, it is much deadlier in the long term as compared to COVID-19.

Following the UN Sustainable Development Targets, carbon mitigation programmes, gradual ecological efficiencies and vegan diets for the rich are good initiatives on paper but they do not permanently curtail climate issues as they do not regulate and control mass industrial manufacturing and consumption, but merely shift the focus. Such interventions have not been very successful because they do not bring about any change in our consumer-oriented and fast-paced lives, which we need to slow down by reducing our dependence on cars and plastics, and focus on reducing pollution through an eco-friendly green approach. The proactive approach to COVID-19, worldwide, demonstrates society's remarkable ability to work in unison by circumventing or controlling the crisis. It proves that if we want, we can take radical measures and achieve what we set out for. Lockdown policies have significantly contributed to decreasing greenhouse gas and toxin emissions. For instance, during the lockdown period, China saw a 25 per cent fall in carbon dioxide levels and a 37 per cent reduction in nitrogen dioxide emissions.

However, this slight reduction in greenhouse gas emissions should not be a reason to rejoice. Indeed, millions of people have faced the economic consequences of lockdowns around the world and millions are expected to fight the downturn caused by the outbreak. Considering the

takeaways from the pandemic, we must make sure that climate change solutions ensure that the poor and most vulnerable are safe and incorporated in our pandemic response strategies. This will not only reverse the global crisis we are already living through but also reduce the possibility of new pandemics. Economic reforms to incorporate 'planned growth,' which puts the welfare of people above profits, should be part of the climate transition. The first step is to ensure that aid packages governments launch worldwide are not wasted. We must avoid a situation where large scale corporations and state players are allowed to rule openly, driven entirely by the motive to make profit. We must also recommend that state funds are allocated equally for development of renewable energy to begin the green new agreement and generate substantial new jobs in the aftermath of COVID-19. Simultaneously, we need to ensure that universal healthcare and free schooling is offered, thereby social protection for all the vulnerable.

The lifestyle changes that we have wholly embraced due to COVID-19 can be a lesson for us all. It can make us familiar with living habits and work patterns that focus on minimalism. That could allow us to use less transport, minimize wastage, have shorter work hours, and rely more on local supply chains actors, which do not damage the ecosystem but move businesses from a globalized pattern to a more localized one. Obviously, the circumstances created by COVID-19 are not ideal, but the swift and immediate response to the virus and encouraging examples of collective help demonstrates that the world is already on route to working together in the face of adversity. ■

AN UNEXPECTED ENCOUNTER WITH A HIMALAYAN LYNX

Nyal Mueenuddin is a wildlife photographer and filmmaker at WWF-Pakistan.



The dramatic scene that took place before us, on the very first morning of filming, was something none of us could have expected, an event that few people have ever witnessed...

Our assignment was simple: to drive to Chitral Valley and create a short uplifting video about the comeback of Pakistan's endangered national animal, the Kashmir markhor.

But the dramatic scene that took place before us, on the very first morning of filming, was something none of us could have expected, an event that few people have ever witnessed, and one that has never before been filmed – a fully grown Himalayan lynx on the hunt for Kashmir markhor.

As I opened my eyes in the small guesthouse bedroom that freezing February morning, I could hear the rain coming down hard outside. Still dark out, I dreaded the thought of leaving my bed and searched for an excuse good enough to postpone our first day of filming. But there was none. Rain or shine, we were in one of the top wildlife hotspots in Pakistan, with a very specific mission and very limited time.

As the sun began to rise, we were already in the land cruiser packed full of camera gear and on the move toward Tooshi Shasha, the heartland of markhor conservation in Pakistan. Iftikhar, a competent WWF field officer sat in the passenger seat scouring the cliffs for movement with a pair of binoculars, as Wasim, our faithful driver, pushed us further into the icy valley. In the backseat, Hashim, a fellow photographer and friend, filmed the passing landscape with a GoPro while I judiciously assembled the main camera rig, imagining which bodies and lens would work best together in the challenging conditions.

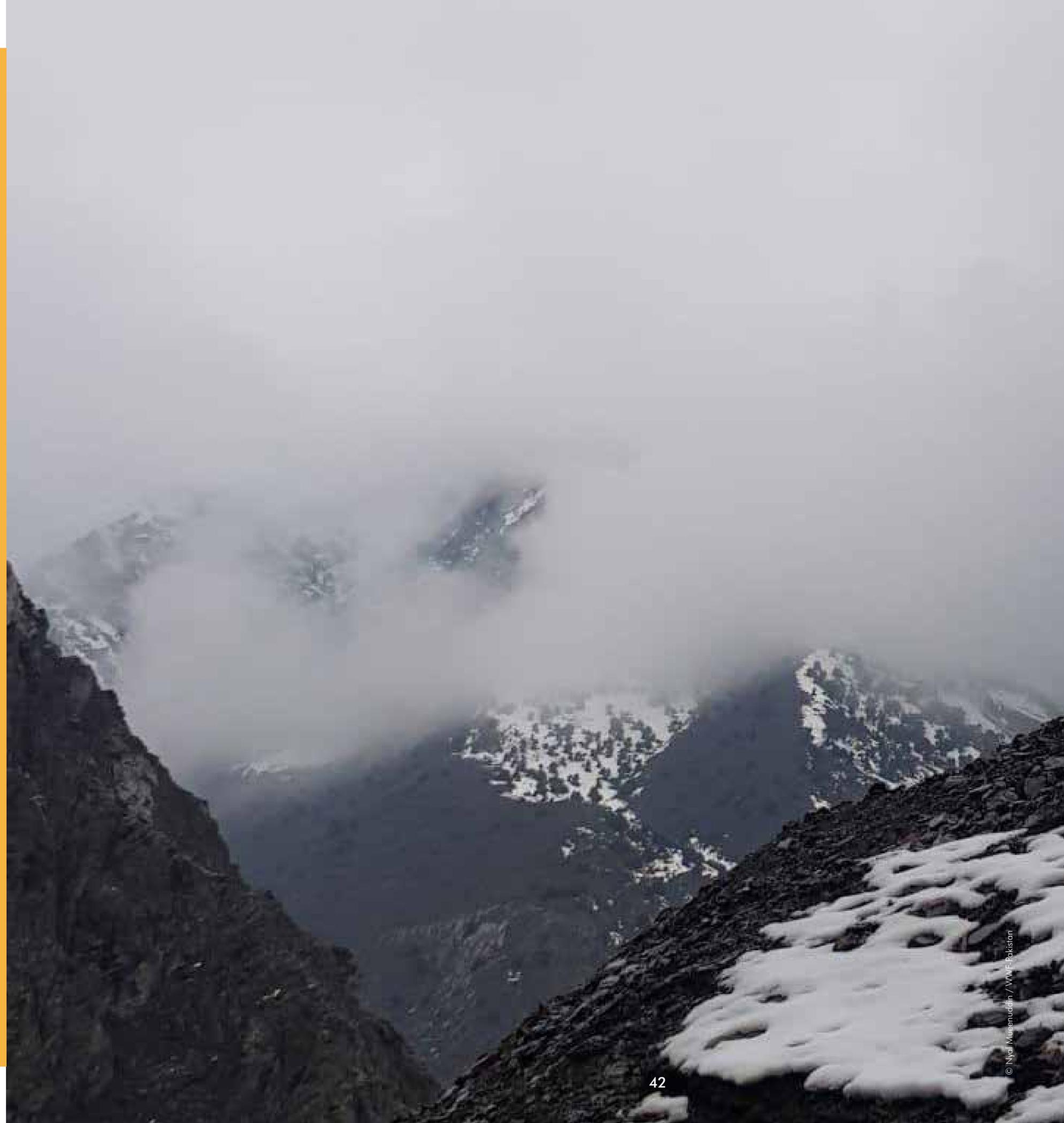
We spotted our first group of markhors, females and yearlings, grazing by the riverside. With the itch of adrenaline usual to the first moments seeing what you've set out to find, I locked the rig onto my tripod and began filming. After some time observing the mothers and their young nibble away naively, I began to scan the cliffs above, soon spotting another group, boldly descending the treacherous cliffs. Perfectly demonstrating the versatility

of these animals, I switched to a super-telephoto lens and began trailing their movements.

Then something caught my eye. A pair of hunched shoulders, perched just above the group and within striking distance, but in an instant, the phantom predator slipped behind a rock and out of sight. Unsure of what I had seen, I looked up from my camera but could see nothing. I called down to Iftikhar and told him I had seen something suspiciously feline, pointing out the spot to him. This was, after all, the exact location where over a decade ago, a BBC team filmed the now-famous sequence of a female snow leopard hunting markhor.

Then he saw it too. "Lynx!" he called out in a very loud whisper. I looked back into my camera and trained my lens in towards where he was pointing. Sure enough, some 20 metres from where I had seen the shoulders, stood a Himalayan lynx, characteristic with its peaked snow-capped ears, majestically overlooking the valley. Surely the cat had weighed its odds in going up against a group of adult markhors and decided on a more vulnerable target and strategic use of valuable energy.

Then suddenly, the lynx was on the move. Down the cliffs, right towards the group of females and young I had been filming just minutes before by the river's edge. With astonishing speed and stealth, the cat came down the craggy mountainside, and in my mind, there was nothing else in the world but the scene that was unfolding within the four corners of my camera's monitor. A minute passed trying desperately to keep the quickly moving subject in frame, and before I knew it the lynx was standing at a halt above the tree line by the river. After a moment's calculation, the lynx pounced with a pronounced finality and disappeared from sight and frame into the bushes. A moment later the lynx fell out of the brush and into the heavy snow, with the throat of a yearling markhor clasped between its jaws. I watched as the life went out of the goat, myself stunned by how perfectly considered the attack had been, and the surgical execution of the final strike. My heart raced with adrenaline and disbelief imagining that what had seemed like a dream before my eyes mere moments before now existed in perpetuity, captured on the very tangible memory card of my camera.





Its meal secured, and now directly across the river from me, the lynx began to eat. After some time, as I sat silently watching from the opposite bank, the cat looked up from the carcass and stared long and hard into my eyes. I stared right back, wondering what it thought of me. I was sharing a moment with one of the most elusive, beautiful and intelligent animals still living wild in these mountains.

That moment, looking back at the lynx, immediately confirmed all my previous determination for this kind of work. It renewed my belief in the power of environmental storytelling and how capturing and sharing these most intimate moments with our planet's endangered species can bring people together to fight for their protection. Not only that but capturing and analyzing the behaviours of rarely seen species can also be crucial in guiding targeted conservation actions specific to the geographic contexts in which these animals live.

More personally, I learned many technical lessons that morning, mainly due to the many filming errors I committed in those most crucial moments. More positively, the experience also stirred a new and more passionate curiosity in me to study and better understand the secret lives and behaviours of the many fascinating species living in these high mountains.

So, how many cold risings in the dark is it worth to experience something you could never expect, but which might change your way of looking at the world forever? I realize now that it is only by fighting back against that intoxicating urge to stay safe in bed, safe from the cold and the wet and the often uneventful, that you are able to create opportunities to witness something spectacular. Thanks to the lynx, and everything else still out there, I'll continue getting up to have that first hot cup of coffee in the dark. ■

