

Editors Column

Welcome to the fourth edition of our newsletter this year. In this issue, the main focus is on the importance of renewable energy and wetlands. We begin with an article about the Kariba REDD+ (Reducing emissions from deforestation and forest degradation), followed by an article on greening the environment.

We also look at an important day on the environmental calendar, the International Day for the Preservation of the Ozone Layer, which will be celebrated on the 16th of September 2016. We also feature an article discussing the importance of wetland restoration and how it improves livelihoods in developing cities. Lastly but certainly not least, an interesting article on the floating solar panels that are in Japan.

We welcome your comments and environmental contributions to the Editor on infor@blackcrystal.co.zw

Thank you and happy reading!



Environmental Consultants
Caring for the environment beyond today

Black Crystal Consulting is one of Zimbabwe's leading reputable companies offering a quality service in environmental and socioeconomic consultancy services. Black Crystal Consulting believes in **caring for the environment beyond today** to ensure that biodiversity is maintained and that natural resources are not depleted for the next generation.

Black Crystal Consulting (Pvt) Ltd
7 Fairbairn Drive
Mount Pleasant
Harare
Phone: +263 4 334 361/ 307 458.
Mobile: +263 779 394 179
Website: www.blackcrystal.co.zw

Kariba REDD+

Black Crystal was one of the project partners in this innovative Carbon credit solutions, called REDD+ (Reducing emissions from deforestation and forest degradation). Here is an update on the project by Christian Dannecker Director Sustainable Supply Chains and Land Use at South Pole. It is an inspiring story about creating transformational solutions at grassroot level.

Background

Zimbabwe has just undergone a severe drought. This meant that the majority of the 200'000 people living in the area of our Kariba REDD+ site had (and still have) a very hard time putting food on the table for their families: the maize harvest was historically low – and the maize that actually managed to grow in the arid conditions was bone dry and fell off the plant. Some people were even looking to poach bushmeat as alternative source of protein.

This was the reality and these were the conditions at the Kariba REDD+ site. Yet, the project lived up to its claim of improving local livelihoods and proved that it made and keeps making a significant difference in northern Zimbabwe:

- Only those farmers engaging in conservation farming taught as part of the Kariba REDD+ project activities, reaped at least a mediocre harvest and were able to pull in the 20 kg of maize per week – the amount needed for a family of five to survive.

“The Kariba REDD has brought a lot of relief and benefits to the local communities.” – Charles Ndondo, Director, Carbon Green Africa

- Having lost their field's harvest, the farmers intensified working in community gardening, which was also kicked off by the project. Recent harvests at Tashinga and Budirio gardens included vegetables such as covo, tomatoes, onions, sugar beans and the first couple of Moringa leaves – produce that the farmers can now sell to purchase the maize flour they need.
- The boreholes rehabilitated by the project, 12 of them in April alone in one single area, have proved to be a lifeline for the project, allowing an average 350 people per water pump to have water to drink, cook and irrigate gardens.



The community members in Hurungwe take pride in their work around their Nutritional Garden (Tashinga), and participate in regular trainings that revolve around crop and pest management and the importance of looking after the environment

- The heightened fire risk caused by the drought was reduced by >500 km of road maintenance (keeping grass off the side and median of the road) and hundreds of hours of firefighting training. The forest's recovery in the last 4 years has been clearly visible and measurable



A beekeeper in Hurungwe district bottling honey. The establishment of beekeeping in the project area has helped increase local family incomes through honey sales

- The production of honey worked well for most areas (except for those that were so badly hit by the drought that the plants did not even flower), generating the much needed cash revenue for families of sometimes more than 400 USD per beekeeper.
- Finally, commercial poaching was significantly reduced. Recently, a local poacher was arrested in the project area, thanks to the cooperation of the project's Anti-Poaching guards, the police and local community.

The poacher had brought down numerous elephants and shipped the precious tusks to the black market. He was sentenced to 9 years in prison. Now, for the first time in years, a herd of more than 100 elephants has been sighted close to the Manyuli camp. Apart from that, Kariba now boasts 3-4 herds of buffalo instead of the one that used to roam alone during the previous years, and the lion population is also said to be slowly getting stronger.



After six hours of digging, pulling, sweating and levering the Conservancy Managers and Carbon Scouts team finally manage to assist the baby elephant, who would have otherwise sunk into this natural mud trap. Image credits: Carbon Green Africa

The main point is that all these activities were only possible due to the funding we were able to generate through selling carbon credits, as our Kariba REDD+ project does not have any other revenue streams at the moment. Going forward, the work that our South Pole Group's consultants do to direct committed organizations to take action on reducing deforestation for example in tobacco, palm oil and cocoa supply chains, has the potential to further generate positive impacts on the local communities.

I believe the private sector really has the ability to trigger such positive change around the world. We are honored to work with committed companies and to catalyze such benefits on the ground, thereby helping society, local economy and above all, the environment!

Source: <http://blog.thesouthpolegroup.com/why-i-get-out-of-bed-every-morning/>

Sustainable Brands: Why Companies Should Care About Renewable Energy

The landmark international climate change nearly 195-nation agreement that came out of COP21 late last year sent a message to the world that a low-carbon future is imminent. The Paris Agreement, for the first time, brings all nations into a common cause based on their historic, current and future responsibilities. Its main aim is to keep a global temperature rise this century well below 2 °C and to drive efforts to limit the temperature increase even further to 1.5 °C above pre-industrial levels. The 1.5°C limit is a significantly safer defense line against the worst impacts of a changing climate.

Amping up investments in renewable energy is an important, if not self-evident, strategy for meeting these international carbon emissions reductions. Months before world leaders met in Paris last December, one of President Obama's senior advisors called renewable energy the "key" to climate action in a blog post discussing the United States' official greenhouse gas emissions-cutting target to the United Nations. The proposal formalizes a U.S. commitment to reducing emissions 26% to 28% below 2005 levels by 2025.

Large companies from Apple to REI already are recognizing the advantages of embracing renewable energy to their bottom lines. Mike Hower from Sustainable Brands spoke with Stefan Rösch, director of Key Accounts, at South Pole Group.

Why should businesses start caring about renewable energy now rather than later?

Leading businesses care because they understand the risks but also the opportunities associated with climate change. On the production side, the growth of renewable energy capacity, which has seen another record year, is clear evidence. On the consumption side, leading corporations are leveraging both their market power and brand to become agents of change. Business initiatives such as the RE100, the Corporate Buyers' Principles and the Break through Energy Coalition, to name a few, are supporting the wide-scale adoption of renewable energy. The question is no longer why care but how businesses

can contribute to the energy transition called for by the Paris Agreement.

Most people/companies know about solar and wind, but what other renewable energy solutions are currently available on the market? How does a company decide which solution is best for it?

Obviously the types of renewable energy options available depend very much on the natural environment, as well as the industrial and energy structure in a specific country. They can come in the form of solar, wind, hydro, biomass, geothermal, etc., but a combination is needed on a global scale to power a cleaner world. Companies and consumers alike are becoming more demanding about how exactly their power is produced and want to see a change in their electricity mix and move away from fossil fuels.

There are various ways to purchase renewable energy and the best solution very much depends on a company's resources, location and volume of their electricity consumption. This can be a challenging environment to navigate especially for businesses who have an international footprint. We assist companies in maximising their impact within their budgetary constraints. For some, like IKEA, direct investment make perfect business sense. For others, long-term Power Purchase Agreements (PPAs) or unbundled purchases of green electricity via renewable energy certificates (RECs) are the best fit. When opting for RECs, you maximise your impact by choosing renowned eco-labels like GoldPower, EKOenergy or naturemade star.

What is the best approach when it comes to integrating renewable energy into business strategy & what are businesses in different sectors already doing?

Every sector will be affected by the global transition to a low-carbon economy, and they will all need to start looking into integrating renewable energy into their corporate operations, whether they are a producer or a consumer of electricity. For the latter, it will be chiefly about reducing the Scope 2 footprint this refers to the indirect emissions from the generation of purchased

energy. Mitigating direct emissions from owned sources (scope 1) or indirect emissions that occur in the value chain (scope 3) can be easily done by purchasing carbon credits from additional renewable energy plants that replace fossil-fuels. In addition, it makes business sense to combine ambitious clean energy sourcing efforts with efficiency measures that aim to reduce the overall energy use and costs, of course.

Where is renewable energy headed in the near future?

Despite the recent sprint towards renewable energy, we still have a marathon to run. In order to achieve international climate and development targets, we need to double the share of renewables in the world's energy mix by 2030. The future for renewable energy will be influenced by, among others, the pace in which we can bring down the costs of the technology and create business models that work in different environments. We will hopefully continue to see the encouraging amount of business leadership on climate change that has begun to emerge.

For the full interview, follow the link below.

Source: <http://blog.thesouthpolegroup.com/interview-with-sustainable-brands-why-companies-should-care-about-renewable-energy/>

Wetland Restoration improves livelihoods in developing cities

Much of our increasingly urban world takes access to clean water for granted, viewing it as an inexhaustible resource. Yet today, hundreds of millions of people will go without clean water and one out of three people will not have access to proper sanitation (WHO & UNICEF, 2015). In 2010, more urban dwellers were without access to water services than in 2000 (De Castro Zoratto & Ivins, 2015), and it is estimated that by 2050 the global demand for water will increase by 55% (WWAP, 2015). Meeting basic water needs will continue to be a challenge.

As people have migrated from rural areas to urban centers in hope of jobs and education, cities have expanded outwards and in many cases have degraded

the waterways and wetlands that surround them, resulting in polluted water with the worst conditions felt by the poor and disadvantaged. This cycle of expansion and degradation is seen throughout the world, but is particularly striking in some of the least developed countries where informal settlements and slums have sprawled faster than basic services. Nearly 900 million people will live in slums by 2020 (WHO & UN-Habitat, 2010), and in developing countries 90% of sewage is discharged untreated into water bodies (Corcoran et al., 2010). In many of these informal settlements, pollution and open sewers contaminate water, resulting in disease and deaths. The UN estimates that approximately 3.5 million people die each year as a result of inadequate water, sanitation, and hygiene (UN Water, 2013). Further, these populations are often the most vulnerable to natural disasters, food shortages, and the impacts of climate change.



With 60% of the global population expected to live in urban areas by 2030 and 70% by 2050 (Lima-Paris Action Agenda, 2015), many cities are now looking at this challenge as an opportunity. For example, at the recent United Nations Framework Convention on Climate Change (UNFCCC) meeting, a coalition of cities and regions from five continents, representing almost one-fifth of the world's population, launched a joint vision "to lock new urban expansion into a new development model towards climate-resilient and low-carbon societies at large scale, leapfrogging the old patterns of urban life for a growing population" (Lima-Paris Action Agenda, 2015). With a new model of development in mind, more and more cities are turning to a natural solution: restoring

wetlands. Wetlands have long been recognized as oases for fish, birds and wildlife, and many are now protected by the Convention on Wetlands of International Importance (Ramsar Convention). Recent examples and new approaches are also proving their worth as natural infrastructure for cities and urban areas dealing with water quality, water security, and climate change challenges.

Drinking Water and Sanitation

Managing and restoring the natural landscape surrounding a city can provide urban areas with basic services. Wetlands are natural water filters, catching sediment and pollution as water flows through them. As they absorb and slowly release this water they regulate water flow, preventing floods and retaining water during times of drought. A city that incorporates sustainable management of its wetlands therefore has a better starting point from which it can build. While city planning, built infrastructure, and a stronger understanding of social and economic trends are still critical needs, this nature based approach can make a city more resilient and can save money.

For example, the sprawling City of Kampala, Uganda, population 1.5 million, is separated from its drinking water supply in famous Lake Victoria by wetlands that function as a buffer through which much of the city's industrial and domestic wastewater passes before being discharged into the lake. Up to a third of the enterprises in the industrial area have no treatment facilities, the high-density settlements and slums on the fringes of the city discharge their sewage directly into the wetlands, and partially treated sewage from the city's treatment plant receives further filtering from the wetlands (IUCN, 2003). While the wetlands have been degraded by development and pollution, studies have shown that the natural water filtration service of the wetlands are so effective and valuable that the city can't afford to continue allowing the draining and filling of the wetlands for urban development. Continued degradation would put their drinking water at risk and replacing the wetlands with a wastewater treatment facility is beyond the city's means. As a result, the Uganda Ministry of Water and Environment and Ramsar Regional Centre for Eastern Africa are looking to

enhance this natural filtration service by stopping further draining and filling and restoring the wetland's health.

Flooding and Climate Change Adaptation

The uncertainty of climate change adds an additional challenge for cities. Even today 90% of deaths from natural disasters are water related, and climate change could further exacerbate floods, droughts, and storms (UN Water, 2012). The urban poor and disadvantaged are frequently at greatest risk, as informal settlements and slums are often built on the least desirable land, land that is exposed and prone to flooding. Again, wetlands can serve as an opportunity to restore natural resilience.

The community of Icidua on the outskirts of Quelimane, Mozambique serves as a case in point. Located in the Zambezi River Delta, all of Quelimane is surrounded by wetlands. Icidua has grown up on a slight rise, fringed by abandoned salt production flats that were once mangrove wetlands. In times past, the mangroves provided some protection from weather and floods, as well as food and fuel. While using built infrastructure to better the conditions of the community has proven both economically and logistically challenging, wetland restoration is offering natural infrastructure that may prove more effective. Two projects, one supported by the Norwegian Agency for Development Corporation and the Ramsar Convention and another by USAID, are using mangrove restoration to provide a natural buffer against flooding, storm events, and sea level change. Further, the mangroves are being planted in a way that will filter the urban runoff and pollution that is degrading water quality.

Water Security

For the semi-urban and densely populated rural areas of the world, wetlands can provide additional services, particularly for the people largely reliant on the food they grow and gather. Like cities, these peopled places have little room to expand or move to in times of need; a failed crop or the lack of access to fish and wild foods can result in suffering. The natural ability of wetlands to store and regulate water for irrigation while supplying fish, food, building materials and livestock fodder has made them integral to the lives of thousands of people.



Realizing the Value of Wetlands

The majority of wetland restoration projects and the majority of funding opportunities for wetland restoration have been focused on fish, wildlife, and biodiversity, but the above examples and countless others are proving the value of wetlands for the services they provide to people. For wetland restoration to be scaled up in a way that significantly contributes to both biodiversity and human wellbeing, the value of wetlands as natural infrastructure must be realized. Recent international agreements and actions have set the stage for a paradigm shift that could promote this new type of wetland restoration project and provide new sources of funding.

In September of 2015, world leaders adopted the 2030 Agenda for Sustainable Development which includes the United Nations' goals for addressing poverty, inequity, and injustice. These Sustainable Development Goals bring together diverse sectors around a common vision, and strive to balance three dimensions of sustainable development: the economic, social and environmental (UN General Assembly, 2015). These goals stress the importance of making cities inclusive, safe, resilient and sustainable, and highlight the role of wetlands and other natural ecosystems in meeting people's basic needs (UN General Assembly, 2015). In fact, the Ramsar Convention's "Wetland Extent Index" will be one of the tools used for measuring and monitoring progress (Dixon, et al. 2016).

Similarly, the agreement reached at the recent UNFCCC Conference of Parties in Paris paves the way for

increased funding opportunities for nature based approaches to addressing climate related challenges in developing countries, and this will likely bring about the increased use of wetland restoration as a way to provide water services and reduce disaster risk. This landmark agreement was coupled with commitment for action that integrates solutions to multiple challenges. For example, the Cities Alliance, UNEP, UN-Habitat, C40, ICLEI and others launched a joint program to strengthen resilience to climate change within the most vulnerable populations (Lima-Paris Action Agenda, 2015), and a broad coalition of nations, river basin organizations, business and others created the Paris Pact on Water and Climate Change Adaptation to, "make water systems – the very foundation of sustainable human development - more resilient to climate impacts (Lima-Paris Action Agenda, 2015b)."

Further, the private sector and local governments are investing in natural infrastructure because it makes business sense. For example, the Water Fund, first used in Latin America by The Nature Conservancy and local partners, is a sophisticated financial tool that couples investment from water-using companies and municipalities to support wetland and watershed restoration projects as a more economical alternative to costly water treatment facilities.

At its 12th Conference of the Parties (COP12), the Ramsar Convention decided to establish a Wetland City accreditation system. Cities which have a productive relationship with their wetlands can apply for this prestigious accreditation. As cities and urban areas continue to grow, these lessons and new opportunities will hopefully allow for wetlands to be valued as a source of water and a tool to meet the needs of developing cities

Source:

http://alliance4water.org/blog/files/2016_v_11.php#.V58Y8Oo_4Zg.email

How to power a renewable world: Green buildings and-building networks as key change agents

The world is well on its way towards a renewable energy future but will need strong leaders to expedite

this important transition. Green buildings and green building networks are currently an underused resource that can take on this leadership role. The world will soon be 100% powered by renewable energy. This is apparent in the myriad of reports as well as in the global agenda on climate change cinched at the COP21 in Paris in December last year. We know that our available “carbon budget” will soon reach its end and that we are slowly inching our way to a 1.5 °C global temperature increase, a limit that we should avoid surpassing.

In many parts of the world, renewable energy is already cheaper than fossil fuels. Quoting Adnan Z. Amin, Director-General of the International Renewable Energy Agency (IRENA): *“The game has changed; the plummeting price of renewables is creating a historic opportunity to build a clean, sustainable energy system and avert catastrophic climate change in an affordable way.”* And because renewable energy is enabled by technologies, not scarce resources, it will only get cheaper. It is safe to say that we are witnessing a paradigm shift, comparable to the internet and mobile telecommunication revolution of the last two decades.



But in order to successfully shift to renewables we will need strong leaders. The crucial difference between the renewable energy revolution and the revolution in the telecommunication sector is the timing and the ‘drivers’ of this change. The world would probably not have experienced seismic shifts had the introduction of the Internet and mobile phones taken ten more years. But in the case of the renewables, every month counts: climate

change is already shaking the planet in the form of extreme weather events, with more to follow unless we drastically speed up our action for the climate. If we don’t act now, we will have a hard time keeping the temperature changes more or less under control.

Electricity is, unfortunately, much less tangible than a smartphone. If a solar panel and a wind turbine had the same appeal and the direct impact on people’s life as a mobile phone with an internet connection, the world would already be running on renewable energy (or at least be half way there).

This is where the importance of leaders comes in: we need consumers and change agents who can show the way. Not only by using renewable energy, but also by proudly communicating about it. The likes of Colruyt Group, a Belgian retail corporation managing the wide chain of Colruyt supermarkets, investing in wind turbines and different renewable energy-focused energy cooperatives are paving the way. Another set of movers and shakers are green buildings and green building networks – a group that can definitely take on leadership and play an important role in shifting the world towards renewable energy.

Why have green Buildings?

- In most countries, buildings represent 30 to 40% of total final energy consumption (other sectors are e.g. industry and transport)
- Buildings are the places where people spend most of their time: to work, eat, relax and sleep. This is the place where they get electricity out of the wall and where they consume most of the electricity.
- Green building networks already have experience in communicating about the impacts of buildings, and in setting workable standards to reduce that impact.
- The green building sector is well structured and the green building councils form a unique structure where experts exchange experience and measures.
- The first steps to leveraging this network of renewable energy advocates have already been taken: An increasing number of green building standards are now explicitly recommending that all purchased

electricity should be renewable. The Green Key voluntary eco-label for hotels and tourist, for instance, ties adhering establishments to provide documentation that they use energy from renewable sources. BREEAM, the world's foremost environmental assessment method and rating system for buildings, has become a strong advocate for the specification and design of energy efficient building operations.

The LEED Standard goes one step further by not just referring to renewable energy, but to ecolabeled green electricity, such as electricity with the Green-e or EKOenergy label. By purchasing ecolabeled green electricity, the buyer guarantees that the purchase has a higher positive impact: In addition to tracking renewable electricity, an ecolabel often takes into account people and biodiversity as well as. It also makes it easier for buildings to communicate about their green energy purchase, which helps to convince even more people to follow the example.

Buying green energy is easy and it is possible to make it even easier by collaborating. Green buildings and green building networks can help pave the way not only in countries where renewable electricity is already a common practice, but also in countries where it is not.

Source: <http://blog.thesouthpolegroup.com/how-to-power-a-renewable-world-green-buildings-and-building-networks-as-key-change-agents/>

More Spark From The Sun Spurs Floating Solar Plants Across Japan

Developers first placed solar panels on water years ago to address land-based space constraints. Now, they're finding floating plants may be more efficient. In a year-long study in Hyogo prefecture north of Osaka, solar panels installed on a reservoir generated 14% more power than those set up on the rooftop of an office building, according to the local authorities who conducted the review. "Water keeps panels cool," said Hajime Mori, the head of operations in Japan for Ciel et Terre International SAS, a French company involved in many floating-solar projects around the world. That cooling

effect allows the units to work more efficiently than modules on traditional mounts, which tend to heat up in the sun. The findings promise to open new areas for expansion for an industry that has spread panels across the countryside from Japan to Germany and California, sometimes earning the ire of residents in the process. As more plants are built, land availability threatens to become a bigger concern. Putting solar panels on lakes and reservoirs already is catching on, with projects underway in more than a dozen countries. Signs of greater efficiency are likely to give the practice another spur. Japan has evolved into a key market for Ciel et Terre. After its first installation in 2011 for a 15-kilowatt project in France, the company supplied floats for a 1.2-megawatt station in Japan's Okegawa city, Saitama prefecture, in 2013, followed by 22 other projects in the Asian nation. Ciel et Terre has also worked on a 6.3-megawatt project by Thames Water Utilities Ltd. at a reservoir near London's Heathrow Airport. It's eyeing markets in the U.S., Brazil and China.

In China, the developer Xinyi Solar Holdings Ltd. has completed a 20-megawatt solar farm in Huainan City about 300 miles northwest of Shanghai the Anhui Province. That project, which Xinyi calls the world's largest floating PV plant, is located on a body of water created from subsided land over a coal mine. At least 15 floating solar projects have come online in Hyogo since the prefecture completed its study in March 2015, Kenichi Tamura, an official in charge of the research in the Kitaharima region, said in an interview. Hyogo has 38,000 reservoirs, accounting for about 20% of all such bodies of water in Japan. "Our hope was that installations would expand if the prefecture took a lead and presented favorable results," Tamura said.

In Japan, the world leader in water-based solar projects, a 13.7-megawatt station is under construction in Ichihara City in Chiba prefecture near Tokyo by a venture between Kyocera Corp. and Century Tokyo Leasing Corp. It's the fourth floating plant in Japan for the venture. At the bottom of the reservoir in Ichihara, divers have already installed nearly 470 anchors that will be connected to Ciel et Terre's floating structures, according to Harutaka Noda,

division manager for Kyocera Communication Systems Co., the unit of Kyocera in charge of construction. Photovoltaic panels are being mounted to floats connected to smaller structures crisscrossing the water surface to form passages for maintenance workers on the 60-hectare reservoir.



Water-borne installation is not without challenges. Experience has shown developers that placing panels closer to shore cuts down on maintenance costs. Consistent water levels also mean less pressure on the anchors. Costs are also lower when panels can be placed over shallower water. So far, Ciel et Terre has supplied equipment for about 44 megawatts of floating solar projects globally including 33 megawatts in Japan, and another 65 megawatts are under construction or planning. Besides a boost to the return on investment due to lower leasing prices and cheaper installation costs, solar panels on water also slow algae growth and reduce water evaporation.

The 1.2 megawatt project in Japan can yield about 30% more power compared with panels on the ground, according to Kenji Araki, a spokesman for West Holdings Corp., whose unit was in charge of engineering, construction and procurement of the project. "We wanted to continue with more floating projects after having learned Okegawa has better generation efficiency," Araki said.

Source: <http://www.bloomberg.com/news/articles/2016-06-06/more-spark-from-the-sun-spurs-floating-solar-plants-across-japan>

International Day for the Preservation of the Ozone Layer 2016

In 1987 representatives from 24 countries met in Montreal and announced to the world that it was time to stop destroying the ozone layer. In so doing, these countries committed themselves, via the Montreal Protocol on Substances that Deplete the Ozone Layer, to rid the world of substances that threaten the ozone layer. On December 19, 1994, the UN General Assembly proclaimed September 16 to be the International Day for the Preservation of the Ozone Layer, commemorating the date when the Montreal Protocol on Substances that Deplete the Ozone Layer was signed in 1987. The day was first celebrated on September 16, 1995.

The theme for the 2016 International Day for the Preservation of the Ozone Layer to be marked on 16 September is: **"Ozone and climate: Restored by a world united"**. The theme is complemented by the tagline: Working towards reducing global-warming HFCs under the Montreal Protocol. The theme recognizes the collective efforts of the parties to the Vienna Convention and the Montreal Protocol towards the restoration of the ozone layer over the past three decades and the global commitment to combat climate change. As a result of concerted international efforts, the ozone layer is healing itself and is expected to recover by the middle of this century. In addition, the Montreal Protocol has significantly contributed to the mitigation of climate change by averting the emission of more than 135 billion tonnes of carbon dioxide equivalent into the atmosphere by simply phasing out ozone-depleting substances.

Additionally, as mandated by the "Dubai Pathway on Hydrofluorocarbons (HFCs)" adopted in 2015, parties are working within the Montreal Protocol to an HFC amendment in 2016 by first resolving challenges by generating solutions in the contact group on HFCs. According to scientific information, reducing HFCs under the Montreal Protocol can avoid 0.4°C of global warming by the end of the century, while continuing to protect the ozone layer.

Thank You!!!