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The Crystal

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Editors Column

Compliments of the new season to you all. Welcome to our first edition for the year in which we are reporting on the historical outcome of the recent COP21 United Nations Climate Change Conference held in Paris, a new Biomass Plant in China, anti-poaching activities of the Save Valley Conservancy, the country's current dam levels and the need for the protection of wetlands. We also present some fascinating facts about environmental benefits of plants in urban areas and we introduce to you a new energy and resources assessment service launched for 2016 by Paramark

We welcome your comments and environmental contributions to the Editor:

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Thank you and happy reading!

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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.

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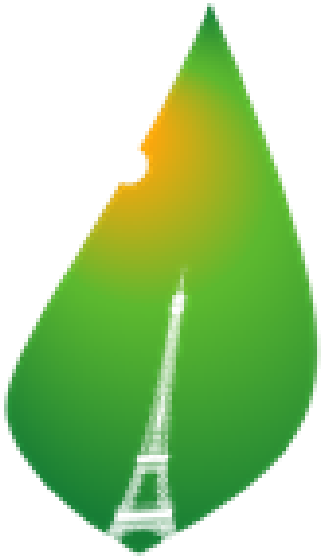
United Nations Climate Change Conference – COP 21

The 2015 United Nations Climate Change Conference, COP 21 or CMP 11 was held in Paris, France, from 30 November to 12 December 2015. It was the 21st yearly session of the Conference of the Parties (COP) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 11th session of the Meeting of the Parties to the 1997 Kyoto Protocol.

The conference negotiated the Paris Agreement, a global agreement on the reduction of climate change, the text of which represented a consensus of the representatives of the 196 parties attending it. The agreement will become legally binding if joined by at least 55 countries which together represent at least 55 percent of global greenhouse emissions. Such parties will need to sign the agreement in New York between 22 April 2016 (Earth Day) and 21 April 2017, and also adopt it within their own legal systems (through ratification, acceptance, approval, or accession).



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

According to the organizing committee at the outset of the talks, the expected key result was an agreement to set a

goal of limiting global warming to less than 2 °C compared to pre-industrial levels. The agreement calls for zero net anthropogenic greenhouse gas emissions to be reached during the second half of the 21st century. In the adopted version of the Paris Agreement, the parties will also "pursue efforts to" limit the temperature increase to 1.5 °C. The 1.5 °C goal will require zero emissions sometime between 2030 and 2050, according to some scientists.

Prior to the conference, 146 national climate panels publicly presented draft national climate contributions (called "Intended Nationally Determined Contributions", INDCs). These suggested commitments were estimated to limit global warming to 2.7 °C by 2100. For example, the EU suggested INDC is a commitment to a 40% reduction in emissions by 2030 compared to 1990. The agreement establishes a "global stocktake" which revisits the national goals to "update and enhance" them every five years beginning 2023 However, no detailed timetable or country-specific goals for emissions were incorporated into the Paris Agreement – as opposed to the previous Kyoto Protocol. A number of meetings took place in preparation for COP21, including the Bonn Climate Change Conference, 19 to 23 October 2015, which produced a draft agreement.

The objective of the 2015 conference was to achieve, for the first time in over 20 years of UN negotiations, a binding and universal agreement on climate, from all the nations of the world. Think-tanks such as the World Pensions Council (WPC) argued that the keys to success was convincing officials in the U.S. and China, by far the two largest national emitters to come onboard. Things changed for the better on 12 November 2014 when President Obama and General Secretary Xi Jinping agreed to limit greenhouse gases emissions."

To some extent, France served as a model country for delegates attending COP21 because it is one of the few developed countries in the world to decarbonize electricity production and fossil fuel energy while still providing a high standard of living. As of 2012, France generated over 90% of its electricity from zero carbon sources, including nuclear, hydroelectric, and wind. During previous climate negotiations, countries agreed to outline actions they intended to take within a global agreement, by 1 October 2015. The INDCs would reduce global warming from an estimated 4–5 °C (by 2100) to 2.7 °C, and reduce emissions per capita by 9% by2030, while providing hope in the eyes of the conference organizers for further reductions in the future that would allow meeting a 2 °C target. On 12 December 2015, the participating 195 countries agreed, by consensus, to the final global pact, the 'Paris Agreement', to reduce emissions as part of the method for reducing greenhouse gas. In the 12-page document, the members agreed to reduce their carbon output "as soon as possible" and to do their best to keep global warming "to well below 2°C. France's Foreign Minister, Laurent Fabius, said this "ambitious and balanced" plan was a "historic turning point" in the goal of reducing global warming. However, some others criticized the fact that significant sections are "promises" or aims and not firm commitments by the countries.

THE PARIS AGREEMENT

The Paris Agreement (French: L'accord de Paris) is an agreement within the framework of the UNFCCC governing greenhouse gases emissions measures from 2020.

The aim of the convention is described in Article 2, "enhancing the implementation" of the UNFCCC through:

(a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
(b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;

(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Countries furthermore aim to reach "global peaking of greenhouse gas emissions as soon as possible".

Zimbabwe Dams Some Only 51% Full: Call For Water Preservation

Currently dams in Zimbabwe are on average only 51% full at a time when they should be spilling. This is due to the erratic rains received resulting from the global El Nino effect. Environment, Water and Climate Minister Oppah Muchinguri-Kashiri recently announced that existing dam water levels re in an unfortunate situation as most of them did not have enough water to last the country till the next rainy season. “This paints a bleak picture as some towns and cities will have to resort to strict water management strategies.

These are chilling effects of the climate phenomenon which has not only affected Zimbabwe, but the whole SADC region. Most of the dams were drying up, for example in Manicaland Osborne dam stands at only 33%, Chesa and Mazowe dams in Mashonaland Central are only 33% and 31% full respectively. She said ground water levels, especially in cities such as Harare, were also under threat as the water table continued to recede because people had resorted to use of ground water as an alternative to municipal supply. Our water sources are drying up in all the seven catchments namely Runde, Save, Manyame, Mazowe, Sanyati, Gwayi and Mzingwane due to erratic rainfall patterns over the past 5 years,” she said. Minister Muchinguri- Kashiri urged all citizens to use water sparingly. “Citizens of Zimbabwe, this address is a clarion call for all of us to be highly responsible and adopt measures that will ensure that we go through the drought period together,” she said.

Source: New Ziana

Fascinating Facts About the Environmental Benefits of Plants In Urban Areas

- **Plants help capture rainfall.** Some are more efficient in capturing rainfall and can help in the management of storm water. In experiments flower containers planted with sedum (large genus of flowering plants) retained about 30% of water whilst salvia (largest genus of plants in the mint family) retained about 50%.
- **Street trees can trap pollution.** Some trees can help trap the particles emitted from polluting vehicle emissions A large Tilia (European lime) may hold about 166g of particulates in dry weather and this does not include those held in the woody parts of the tree.

- **Tree leaves can clean air.** By planting trees that trap particulates we can clean the air. In experiments the leaves of five species (Plane, lime, holm oak, turkey oak and olive) captured a similar amount of particles in dry conditions. However in rainy conditions, the London plane retained 90% of particles on its leaf surface as compared to the olive which retained only 13%.

- **Lawns and planted surfaces reduce the water needs of trees.** By maintaining green surfaces under trees you help the trees cooling capacity and hence less water is needed to sustain it. In tests trees grown in 20 litre containers placed on top of grass needed an average 1.5 litres less water per tree and had lower leaf temperatures than those in pots standing on gravel.

Source: NACC

Wetlands

Check out this highly informative TED talk on wetlands: www.ted.com/talks/david_sedlak_4_wayes_we_can_avoid_a_catastrophic_drought

Update from the Save Valley Conservancy

2015 was a very difficult year for the Savé Valley Conservancy (SVC) and for the rhino population in the Lowveld. This is primarily because previous rhino poaching syndicates that were disrupted had reformed and came back with the vengeance. However, through intelligence and dedication from the men in the Anti-Poaching Unit (APU) field, the SVC were able to achieve some excellent results that made 2015 a monumental year.

The first success saw the recovery of weapons and the arrest of several poachers, some convictions have been made and the cases are still ongoing.

The second case was the best win to date. The APU were able to make contact with the most notorious rhino poaching group in the country. This is the group that has done most of the damage in the conservancy over recent years. Through good intelligence and excellent police cooperation the SVC was also able to get the main mastermind arrested. He had a long standing history with rhino poaching and was responsible for a huge amount of damage country wide. The good news is that on New Year's Eve he was sentenced to 35 years in prison after pleading guilty on three counts of rhino poaching. This is the strongest sentence issued for rhino poaching in Southern African history! This was a very exceptional way to end off 2015 and go into 2016 and will no doubt have a very positive effect on conservation in the Lowveld.
Sadly, the war on poaching in the SVC is not over, but it does mean that the SVC had a very positive win to build on and no doubt take the APU to the next level.

The SVC would like to thank the Tikki Hywood Trust for their tireless work with the judiciary as they were a key aspect in the success of this case. The SVC are also very grateful to the Police and to National Parks for their amazing support and team work.

Source: Savé Valley Conservancy Director ATS

New Service for 2016 Launched by Paramark

Paramark is one of the Black Crystal partner organizations, with a background in process engineering they are the market leaders in environmental and occupation health surveys and support. Mr. Adam Lampard, the Technical Director of Paramark, explained that they decided to embark on a new area of business in 2016 called 'The efficient use of energy and resources assessment'. Mr Lampard has a degree in Chemical Engineering from the University of Cape Town and experience in applying best practice to energy and water management within Zimbabwe.

The assessment can identify simple, inexpensive and easily implementable measurers for the efficient use of energy and resources. Sometimes these measurers can be over looked when environmental and occupation health surveys are undertaken. "One of the most

important lessons: challenge conventional assumptions and design principles. Toyota's Kaizen system of continuous improvement has shown it is almost always possible to incrementally improve existing manufacturing processes. Often, throwing out the old practices completely and starting with a metaphorical clean sheet of paper can bring dramatic leaps—improvements of 10 times or more." (Rocky Mountain Institute 2011).

Improvements can be made with a systematic approach. The first step is a potential study which is conducted for free with no obligation. The output from the potential study will be recommendations to a level sufficient for an order-of-magnitude cost estimate together with a fee proposal to develop the potential.

Also Paramark now have an inexpensive local solution to the adverse environmental impact of the spillage of petroleum hydrocarbons (oil, petrol, diesel etc.). Mr. Lampard explained that petroleum hydrocarbons are a serious pollutant problem on water because they spread to form a layer on the surface of the water preventing oxygen entering the water and killing aquatic life "Just 1 litre of oil can pollute 1 million litres of clean water" (Saskatchewan Association for Resource Recovery Corp. Annual Report 2008). Paramark used to import a special absorbent fiber from South Africa and because the product is so bulky and its rate of absorption is relatively low, the transport costs are prohibitive.

Fortunately, Paramark have identified a local product that is inexpensive and a little goes a long way. They are now selling Paramark Oil Absorbent Fibre (ParaSorb) which is a cotton gin bi-product (a bi-product from the cotton ginning process) which is naturally oleophilic and hydrophobic. ParaSorb will absorb high volumes of petroleum hydrocarbons from any surface and is ideal for absorbing off the surface of water without absorbing the water, whilst remaining afloat for retrieval.

As it is inexpensive for the amount of oil it absorbs it may be used for all sorts of oil cleaning jobs from scrubbing in on fuel station forecourts to absorb spillages to cleaning the engine. As the used product is useful as fuel, disposal is not difficult, alternatively the waste will biodegrade using the correct procedure. For further details please contact Mr Lampard at **alampard@yoafrica.co.zw**

Nangong Biomass Plant, China

The new National Bio Energy Nangong Biomass Power Plant in the People's Republic of China (PRC) is using agricultural waste residues (mainly cotton residues and

wood waste) for the production of clean renewable electricity for the Chinese North Power Grid (NCPG). The Biomass Power Plant has a capacity of 30 Megawatts with a 130 t/h biomass-fired boiler, one turbine and a generator, all manufactured in China. The plant delivers over 190'000 Megawatts-hour of electricity to the NCPG utilizing about 300,000 tons of biomass waste per year.

The agricultural waste is collected from the area nearby the project. Before the construction of the power plant, the agricultural residues were burnt or left to decay in an uncontrolled manner. Construction of the plant started on the 25/10/2009 and it was ready on time in less than a year for operation. The power plant is located to the north of Boli village, in Nangong County in the Hebei province. Nangong County is a rural region of the PRC that is very rich in agricultural resources. It is one of the biggest bases for cotton and other agricultural produce in Hebei province.

The Benefits of the Nangong Biomass Power Plant

Socio-economic impact

- The plant generates over 190'000 MWh of clean electricity per year for local residents and thus meets the energy needs of approximately 164'000 people in the Nangong region of Hebei province.
- The project contributed to the creation of 133 job positions, including 72 people from local ethnic minority groups and 33 female workers. The total salaries of the employees were 4,616,057 RMB in 2010. Furthermore, all employees attend health and safety trainings several times a year and receive an annual free health examination.
- The low-income local farmers' incomes increased as they now sell their agricultural waste to the power plant. The power plant purchased 21,251,028 RMB worth of biomass residues in 2010.
- Located in a rural area with a weak power grid, the project improved the power supply and stability of the grid. Before the implementation of the power plant, the local community was facing electricity cuts, which were particularly damaging during the spring plough periods.

Environmental impact

- The project significantly reduces the use of fossil fuels, particularly coal in the Chinese power sector. Furthermore, the plant avoids CH4 emissions, as the agricultural residues would otherwise be dumped, left to decay or burnt in an uncontrolled manner without utilizing them for energy production. The estimated annual GHG emission reductions of this project are 147'000 tCO2e of greenhouse gases per year.
- The project reduces smoke pollution from the open burning of biomass residue, as well as sulphur dioxide (SO_2), nitrogen oxides (NOx) and particulate matter that are typically associated with the burning of fossil fuels.

Source:httpwww.thesouthpolegroup.com/publicprojects0930_nangong_biomass.pdf

Thank you!!!!