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Responding to climate change

AFTER PARIS, IT'S TIME TO DELIVER

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OCTOBER 22nd
6:25 am

The Pharaohs mastered pertinent sciences to precisely align a flux of sunlight to perfectly irradiate King Ramses face twice a year - King's coronation day and birthday - in his chamber located 65 meters from Abu Simbel temple **gateway**.

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Confidence.. Distinction

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Energy efficient lighting offers twin benefits of providing cost-effective lighting solutions to rural off-grid communities, and radically cutting greenhouse gas emissions associated with energy use. Philips Lighting plans to sell two billion LEDs by 2020. This could save the energy equivalent of 60 medium sized coal power plants or emissions from 24 million cars.

The health of the planet's coral reefs is a stark reminder of the impacts a warming planet is having on ecosystems. According to Catlin Seaview Survey the world has lost 40% of its corals since 1985. As warming waters 'bleach' corals, increased levels of carbon dioxide absorbed by the sea are making the oceans more acidic. Other threats include shipping and pollution run-off from the land.

All photos: © XL Catlin Seaview Survey.
http://catlinseaviewsurvey.com | www.globalcoralbleaching.org

Photo: © Poon Wai Nang | Oxfam

Over 60 million people across Africa, Asia, Latin America and the Caribbean were affected by the 2015-2016 El Nino, according to Oxfam. While it's a regular event, the combination of high global temperatures added to its severity say experts, sparking floods in some regions and erratic rains in others, forcing many to leave their farmlands in search of water and food.

On 22 April US secretary of state John Kerry joined officials from 174 other countries to sign the Paris Agreement, a first step towards the deal becoming international law. He was joined at the United Nations Headquarters by an unusual guest: his two-year-old grand-daughter Isabelle. By 5 October the deal received enough support from governments to ensure it enters into force on 4 November 2016.

Credit: UN Photo/Amanda Voisard

Photo credit: Pixabay

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Credit: UN Photo/Eskinder Debebe

Patricia Espinosa, Executive Secretary, UN Framework Convention on Climate Change (UNFCCC)

COP22 this year in Marrakech will not just be a celebration of the entry into force of the Paris Agreement in record time where the first meeting of the CMA will be held. It will also be the first COP that places implementation and action squarely at the centre of attention, it will provide governments an opportunity to present a roadmap to mobilize the 100 billion dollars in annual support by 2020, to increase clarity for adaptation finance and for a mechanism to strengthen capacity building.

We will see initiatives that support the implementation of Nationally Determined Contributions and help integrate them into each country's development agenda alongside the Sustainable Development Goals also adopted in 2015.

Marrakech is our opportunity to strengthen the partnerships that accelerate the transition towards a low-emissions future and promote sustainable development committed to by governments. Finance and national policies are central elements to allow delivering on these commitments.

Finance flows should all align with the long-term goal in the Paris Agreement. Friends, we know that we must mobilize more than the US$100 billion committed to and included in the Paris Agreement, we need trillions to truly meet the climate challenge.

Yes, climate finance must flow and at a faster pace that it currently does. But we must also look at energy subsidies, how markets price carbon, the value of green investments and potential gains from incentivizing nature-based solutions. Central banks, development banks, funds and institutional investors need to be involved. Climate considerations must be mainstreamed into our global financial architecture.

At the same time, public policies have to incorporate climate change goals and create an enabling environment for a global transformation of economic and social development. It is not only about environmental policy. Energy policy, economic policy, trade policy, transportation policy and land use and resource management policy should all work in a concerted, coherent manner to enable every country to accomplish their Paris Agreement and SDG contribution. Strong leadership at the national level is indispensable.

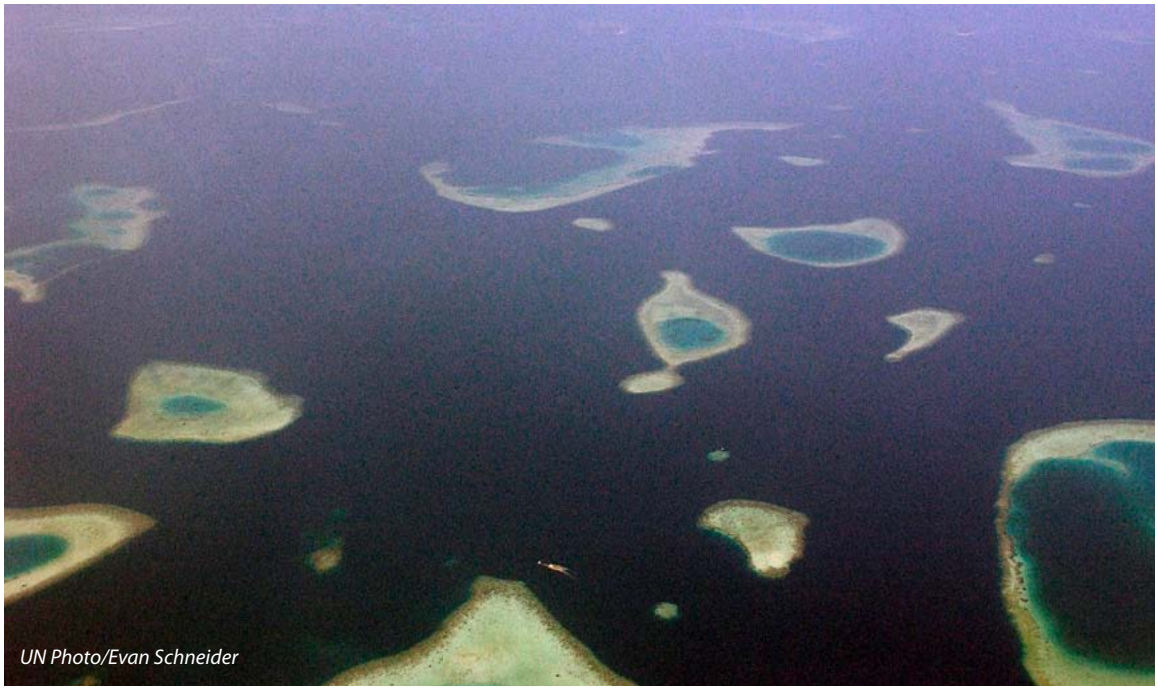
The Sustainable Development Goals and the Paris Agreement envision a model of growth and development that is good for people and good for the planet. This is an opportunity to improve the wellbeing of billions. It is the opportunity to avoid instability and safeguard the development gains achieved to date. It is an opportunity to end extreme poverty, ensure adequate food and water, protect public health, increase equity and empower through education.

It will require steadfast dedication and I am confident that all of you here today are willing to take the next step. We have the mandate. We have the momentum. Now is our moment. Let's work together to seize this great opportunity and turn our collective vision into our collective reality.

This is an excerpt from a speech at Chatham House on 10 October.

Thoriq Ibrahim signs the Paris Agreement.

UN Photo/Amanda Voisard



UN Photo/Evan Schneider

The Maldives is comprised of 26 atolls in the Indian Ocean, on average around 1.5m above sea level

By Thoriq Ibrahim
Minister of Environment and Energy of the Republic of Maldives

Much of the attention on Paris Agreement on climate change has focused on how it will reduce the greenhouse gas emissions responsible for climate change. But another aspect that is just as important to its adoption, and one that will be critical to the health and prosperity of countless communities moving forward is adaptation—the actions that must be taken to adjust to climate impacts like droughts, floods, erosion, and sea level rise.

The international community has agreed that developed countries will mobilise at least $100 billion dollars a year by 2020 to help developing countries deploy clean energy sources and climate-proof infrastructure from worsening impacts. However, this level of financial support has so far failed to materialise, and besides funding for adaptation has historically lagged behind that for mitigation.

Though the Paris Agreement calls for a "balance" between climate finance provided for adaptation and mitigation it does not enumerate a specific amount. What further complicates this calculus is that determining precise numbers for these costs is difficult if not impossible because they are so intertwined with other development needs.

Several studies, however, project a range in the tens of billions of dollars per year. A significant figure, particularly given the difficulty involved with raising private funds for adaptation projects that aren't designed to provide a return on investment.

In the Maldives, for example, we have been increasingly experiencing droughts tied to climate change. Fortunately, we were among the first countries to receive support from the Green Climate Fund (GCF) for an adaptation project designed to enhance water security in some of our most remote atolls.

Work has begun and we expect it to deliver clean water and sanitation to at least 20,000 people within the five-year timeframe laid out under the proposal. But like other small island developing states, the Maldives population is widely dispersed over many islands and thousands of square kilometres of ocean. More support will be needed to adapt to water shortages and other climate impacts.

One challenge that affects much of our archipelago is sea level rise and erosion. Since the early 1970s, coastal land loss has been observed across the country and it is getting worse. A 2010 survey of inhabited islands estimated that the cost to protect shorelines using fixed concrete structures would exceed US$8.7 billion.

By contrast, sand bags that provide a similar level of defence would be about US$1.6 billion. There are different rationales for using these options with pros and cons for each, but suffice it to say that the price tag in either case is prohibitive for an economy as small as ours.

Like the Maldives, every country, and every community within every country has very specific adaptation needs. While shifting rain patterns in the Indian Ocean, for example, have led to droughts in one corner of our archipelago, they have also brought unprecedented rains to the other—making a much different kind of adaptive response necessary.

Other islands around the world have unique adaptation needs, and places like Africa, where some countries have entered what could be called a permanent drought, must find ways to adapt entire agricultural sectors.

Adaptation, in other words, is a local issue of global concern and we will only be able to manage it well if we match solutions on the ground with adequate support from the international community. It is something to think about as we prepare to implement the Paris Agreement.

Thoriq Ibrahim is the environment minister for Maldives and chairs the Alliance of Small Island States.

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SO THE PARIS CLIMATE DEAL ENTERS INTO FORCE: THEN WHAT?

Excitement is building over the likely entry into force of the UN's climate deal – but that will only be the start of a new set of tricky negotiations.

By Ed King

Ratification of the first major emissions-busting climate treaty the UN managed to deliver took seven years and left the world's top two carbon polluters with a free pass to burn all the oil, coal and gas they wanted.

When the Paris climate agreement, the successor to the Kyoto Protocol, comes into force, it will have taken around 10 months to ratify and will account for the majority of emissions from countries.

Far from dodging the carbon bullet, this was a deal the US and China helped develop. Dwell on that for a second. In diplomatic terms through 2016 we've seen the UN hit warp-speed, taking nearly 200 countries with it.

With the EU's formal ratification in the first week of October that means the twin threshold of 55 countries accounting for 55% of emissions have been met.

Once branded the UN's '2020 climate deal', the Paris pact has smashed diplomatic norms and turned the idea that countries cannot work together on climate change on its head.

Once the ratification threshold of 55 countries covering 55% of greenhouse gas emissions is passed, it will take 30 days for the deal to become UN law and effectively a new treaty.

By my calculations that means it will go live the day before the 2016 UN climate summit in Marrakech opens for business.

The mere fact of entry into force is significant on a number of levels. For one, no-one thought it would be this fast when the deal was struck last December.

"The general thinking at that time was it would come into force in 2020," said the deputy chief of the UN's climate body Richard Kinley. "We are now poised to see the agreement come into effect this year."

This initial success will be a proverbial two fingers from the UN to doubters who thought it wouldn't happen, and to one of the Big Apple's most famous residents: Donald Trump.

If elected president in November he says he will scrap the deal. In reality he can probably wreck US low carbon plans, but once Barack Obama formally joins, the US is legally bound to the pact for four years.

The political momentum generated by entry into force will also boost confidence the world is moving in a greener direction.

It's hard to put a specific value on a feeling, but try this: in August investors controlling over $13 trillion in funds said ratification would offer a "clear signal" to the business community that a "low-carbon, clean energy economy is inevitable".

And it raises the stakes for the private sector to adjust, as Bank of England governor Mark Carney explained in a recent speech: "By bringing forward the horizon, it puts a premium on the ability of private markets to adjust."

Political messaging is important, but the practical realities of the Paris agreement going live are less exciting. So hold your horses. Not everyone will have formally joined the new pact.

Russia appears curiously silent on ratification, the Philippines eccentric president Rodrigo Duterte has threatened to pull out. Many African and Middle East countries also appear to be taking their time to sign up.

In an attempt to assuage concerns, a 'reflections note' from Morocco's environment minister Hakima El Haite and France's climate envoy Laurence Tubiana earlier this year indicated these laggards won't be excluded as a result.

"We consider that no Party should be disadvantaged or excluded from the collective development of the rulebook of the Paris Agreement simply because it is still in the process of joining the Agreement," they said.

The likely outcome is that the first official session of the Paris Agreement, known as CMA1 in UN jargon, will be opened and swiftly closed. As the world heats, the deal will be placed on ice.

"It puts us in a slightly tricky situation, as the APA [round of talks on working out rules for the new deal] has just been established," said Jo Tyndall, a New Zealand diplomat who is co-chair of the talks.

"It is just simply not realistic to expect everything can be concluded so we can fulfil mandate to CMA1."

That's because talks on how it will work only started in May, and diplomats face a workload that many assumed they would have 5 years to complete.

A UN 'progress tracker' released in July outlines a whopping 135 different tasks facing resolution.

Of these the UN identifies 24 that have to be completed before the Paris agreement can function.

Many sound fairly simple but there are already signs of differences between developed and developing countries over how they will be crafted and what leeway poorer nations will get.

Four stand out – although they are by no means the only important jobs facing negotiators:

- How will the 2018 global review into climate targets and plans work?
- What level of support will developing countries get pre-2020?
- Will a new transparency mechanism cover developed and developing countries?
- Who will write the rules for carbon markets under the Paris deal?

On the last point, one consultant working with countries on the development of market mechanisms reckons it's unlikely they could agree rules before 2018.

Little was accomplished at UN talks in May, they added, and few governments have thought about how an emissions mitigation mechanism might work in practice.

Separately, it's an open secret that many developing countries require help delivering on their climate plans and ensuring they are adequately financed. Organisations like CDKN are helping build capacity across Africa and Latin America, but progress has been slow.

At a recent event in London hosted by CDKN one African negotiator spoke of his frustration at the lack of support poorer countries had received since Paris to help deliver on its aspirations.

Remember some of the plans (INDCs) submitted last year were just a few pages: from that they now need to build a national industrial strategy that can endure for decades, and pass laws like the UK's 2008 Climate Change Act.

It's not just governments that are suffering. The UN climate body has issued a plea to donors for more cash. Voluntary contributions are down from $300,000 in 2014 to $80,000 in 2016.

In an interview with Climate Home earlier this summer, Tubiana suggested 2018 could be the "real deadline to finish preparations" and ensure all countries are ratified and on board.

With a new IPCC climate science study into dangers posed by 1.5C of global warming due the same year, many hope 2018 could be the moment for a renewed and tougher set of climate targets.

To that end, the key goal for COP22, the year's main UN climate summit in Marrakech, is to develop a roadmap for future talks and the development of a treaty rulebook in the coming 24 months.

Should ratification become reality, it will be the start of a new journey and one that will not immediately deliver results, a fact many may find frustrating given the record global temperatures seen through 2016.

For her part Tyndall, whose job it will be to marshall nearly 200 countries in November alongside her Saudi Arabian co-chair, remains confident the process can deliver, despite the tight timeline.

"We have proven that it can be done and it will be done," she said. "The point I would make is that in every meeting since Paris at ministerial level or senior officials the political momentum and strong buy-in from the Paris outcome has remained very clear."

WHY THE NEW CLIMATE MATH IS A DECLARATION OF WAR

Some of the most influential thinkers about climate change have decided that the time for negotiation with fossil fuel companies is over.

By Karl Mathiesen

There is new climate math and it is the most irresistible yet. So we've heard from two of the most eloquent voices for action on climate change: Bill McKibben and George Monbiot.

Writing in response to a report released by US NGO Oil Change International (OCI), McKibben and Monbiot echoed OCI's conclusion that no new coal mines or oil or gas wells can be opened up, lest we exceed the carbon budget imposed on us by atmospheric physics.

In New Republic, McKibben had a characteristically elegant device to explain the findings. There are 942 gigatons of C02 stored in working mines and fields.

But the UN Intergovernmental Panel on Climate Change (IPCC) says that we can't exceed 800 gigatons to stand a decent chance of staying within 2C. That's the upper limit set by the Paris climate agreement.

Thus, said McKibben, the earth's response to climate change would be henceforth governed by this inequation:

942>843

From this he concluded that no new extraction sites should be opened. To do so would be to fail the simplest of maths tests.

OCI founder Stephen Kretzmann put it this way: "Continued expansion of the fossil fuel industry is now quite clearly and quantifiably climate denial."

A mathematician might write it like this:

942>843 $\implies$ no new extraction

That symbol means 'it logically follows'. But the logic is flawed. Critically, in reaching their final conclusion OCI made political and social choices that bear examination.

A year ago, Carbon Tracker Initiative looked at the same problem as OCI and came to a different conclusion. Yes, they said, opening new coal mines was bonkers. But some new oil and gas fields might be acceptable.

There are several reasons why having larger amounts of carbon in working fields that we can safely put into the air doesn't automatically mean no new fields can be opened.

An example of this nuance is that there is so much coal out there it dominates the measure, but how fast is it being dug up and extracted?

This matters because the longer it takes, the less competitive coal becomes against renewable energy sources and the more likely we are to see coal mines closed before they are exhausted. This could create some wriggle room.

Conversely, oil is going to be the most difficult fossil fuel to phase out because of the technological challenge of shifting planes, ships and trucks toward zero-carbon fuels.

At the same time, oil and gas wells decline in productivity toward the end of their lives sending their operating costs higher. This means that old fields might be closed early and new fields might fill the demand more cheaply – even with the start up costs.

This leads to the conclusion that:

942>843 $\not\implies$ no new extraction

Not necessarily anyway.

The OCI report did take these dynamics into account, but it critiques the "least-cost pathway". Just because some new oil drilling might cost less on paper, OCI argues, doesn't make it the appropriate approach in reality.

Pic: © sbamueller @Flickr.com

New calculations from a US NGO indicate tar sands extraction in Alberta, Canada will have to stop for the world to have a chance of limiting warming to below 2C

New wells have investment and political interests behind them that makes them harder to shut down when the time comes.

"Since political action is required, we should look for solutions that are not just economically optimised, but politically optimised. Politically, it is much more difficult to demand the loss of physical capital – on which dollars have been spent, and steel and concrete installed – than to relinquish the future hope of benefits from untapped reserves," argues the report.

Here we find the crux of the disagreement. Carbon Tracker offers an olive branch of leniency to oil and gas companies to continue doing what they do for a while longer. OCI says they are drunk on profits and we should take away their keys.

Having made that decision, the maths was found to back it up. According to Kretzmann the major difference between Carbon Tracker's report one year ago and Oil Change's more recent one is the budget under which we allow ourselves and the fossil fuel companies to operate.

This is a risk judgement. In the climate world, the more carbon you emit, the less chance you have of achieving a certain temperature limit. Carbon Tracker base their budget on a scenario developed by the International Energy Agency (IEA) – called IEA 450.

"IEA 450 is based on a 50% chance of 2C, which frankly we think is too low to represent the top end of the Paris range," Kretzmann told Climate Home. "If this is our policy ambition, shouldn't we be aiming for better than a coin flip's chance of success?"

OCI chose a scenario that gave a 66% chance of staying within 2C. Their budget also gives the world a 50% shot of staying below 1.5C – the more ambitious end of the Paris agreement.

So the new maths is based on a decision about acceptable risk. Which is fair enough but hardly revelatory.

To sum it up:
Carbon Tracker: 50% chance of 2C ==> some new gas and oil OK

Oil Change International: 66% chance of 2C ==> no new extraction

The difference is important because it reveals a split amid influential thinkers in the climate debate about the best way to effect change.

The question hinges on whether to engage fossil fuel companies on their terms: the IEA is considered an authoritative voice within the energy sector and some new oil wells is better than none. Or is it time for all-out war?

McKibben notes that his initiation to carbon budgets came when he based a seminal essay on the subject on the work of Carbon Tracker. But he now clearly believes their approach is too weak for the times.

Writing in the Guardian, Monbiot frames it as the conflict we must have: "Preventing climate breakdown means defending democracy from plutocrats. It's their interests versus the rest of humanity's."

The war has already begun. Climate activists are drawing "red lines" in the grassy hills of Dakota and the courtrooms of the US, in the mud of the Ecuadorean Amazon, on the backs of whales in the Great Australian Bight and dozens of other places.

Calls for a moratorium on new coal mines will now shift to all new fossil fuel extraction. The above formula will be cited as the justification.

The reason McKibben invokes mathematics is its immutability. "The numbers are the numbers," he says. An equation is inarguable. But the simplicity hides the subtext.

A decision is being taken and as the maths gets more complicated, we shouldn't ignore the rounding.

CLIMATE WARS: IS THE SAHEL THE FIRST BATTLE ZONE?

A herdsman on the Séno-Gondo plain of central Mali cares for his goats - a job that is getting harder as populations expand and climate impacts intensify. Photo: © Nick Jubber

If rainfall decreases, and temperatures rise, as the IPCC's 5th Assessment suggests, resource competition across the Sahel is only likely to intensify.

By Nick Jubber

Suleiman is a Fulani herdsman on the Séno-Gondo plain of central Mali. One day he set out with his younger brother and his family's cattle towards an inland lake near the village of Gorti.

On the way, they crossed the edge of a recently harvested millet field. The farmer ran out, shouting at Suleiman to keep his animals away from the crops.

'But you've already harvested the field,' said Suleiman. Still, tensions were high and the farmer was anxious about a portion of the field where the millet had yet to be culled.

He called to his neighbours, who surrounded Suleiman, wielding axes and sticks. When Suleiman staggered home, later that day, he was covered in bruises and wounds, and had to be treated at the local medical outpost.

This is the kind of incident that prompts talk of a 'climate war'. From Nigeria to Sudan, the imbalance between growing populations and dwindling resources is levering conflict in the Sahel (the semi-arid buffer zone between the deserts in the north and the savannas of sub-Saharan Africa). In Suleiman's case, climate is key: as local chief Ali Hajji says, 'this used to be a land of plenty'.

But droughts in the Malian Sahel between the 1960s and 1980s reduced vegetation and water availability, forcing herders to roam further, and prompting farmers to spread their crops more widely.

In 2007, the Nobel Prize chairman, Professor Ole Danbolt Mjos, labelled the Sahel as the setting of 'the world's first climate war'.

Although this claim is loaded with too much drama for most experts, there is a significant roster of voices supporting the contention that conflict in the Sahel is significantly driven by climate (including UN secretary-general Ban-Ki Moon, the UN Environment Programme and the IPCC's 5th Assessment Report on Africa, which asserts that 'climate change will progressively threaten economic growth and human security.'

But is 'climate war' an accurate title? 'War' suggests a series of interconnected battlegrounds, some form of military strategy and specified goals.

What is alarming about the Sahelian conflicts is their organic growth: under comparable circumstances, a Hobbesian struggle breaks out, and the result is bloodshed.

Defining this 'war' by 'climate' is also contentious, given the variety of contributing factors. These include the dispersal of Colonel Gaddafi's weapons in Libya, which has increased access and affordability of small arms in countries such as Chad, Nigeria and Burkina Faso.

Land privatisation is key, so too governmental policies on agriculture and land tenure, development projects such as dam-building on the Niger river, embezzlement of drought relief funds, population growth and issues of political representation.

As ecologist Hélène Claudot-Hawad points out, 'in the Sahara the modern states are viewed as machines for turning out minorities who are relegated to the margins'. This marginalisation, as much as climate, impels the conflicts today.

No war has a single cause. 'Climate war' draws attention to the role played by drought and desertification in the diminution of resources.

It also directs analysts beyond political sloganeering to the practical phenomena that enable political leaders to marshal their recruits.

In Mali, for example, the droughts of the 1970s and 1980s abruptly lowered the flood level of the Niger river, prompting rice farmers to move closer to the river-bed. As a result, Tuareg herdsmen were unable to feed their animals from the nutritious bourgou-grasses flanking the river.

'In a very short time,' according to ecologist Charles Grémont, 'the multiple ties with the people and resources of the Niger valley that had long been fundamental to the history of the southern Tuareg were cut off.'

It is from climate-based developments like this that the present-day armed conflict in Mali can be traced.

For observers of the Sahel, the growing intersection of conflicts is alarming.

Fulani herders in Nigeria have been accused of transporting weapons to Boko Haram; Arabic and Tuareg clans have linked up in Northern Mali; and across porous borders, the arms business has proven as successful as the long-standing trades in narco-trafficking and people-smuggling.

There are too many variables to label this simply a 'climate war'; rather, it is a series of conflicts deeply coloured by climate. Mitigation and adaptation, as set out at the UN's 2015 climate summit in Paris are essential elements in reducing these conflicts.

If rainfall is likely to decrease, and temperatures to rise, as the IPCC's 5th Assessment suggests, the resource competition is only likely to intensify.

Without more holistic engagement and an increase in the quality and output of investment, these conflicts are likely to proliferate more widely, intersect more tightly, and increase their impact outside the region.

Nick Jubber is a writer and a traveller. His latest book, The Timbuktu School for Nomads: Across the Sahara in the shadow of jihad, is published by Nicholas Brealey

Droughts in the Malian Sahel between the 1960s and 1980s reduced vegetation and water availability, forcing herders to roam further (Pic: Nick Jubber)

SOLAR AND SAUDI ARABIA: RIYADH BOWS TO THE INEVITABLE

This year deputy crown prince Salman announced the formation of a post-oil $2 trillion fund, accelerating a major Middle East energy transition.

By Jeremy Leggett

In 2016, the Kingdom of Saudi Arabia has a major opportunity to develop a new industry, an opportunity that became something of an imperative in 2015. Let me examine first the opportunity, then the imperative.

The opportunity involves solar energy, which is fast heading towards becoming the cheapest unsubsidised form of energy on the planet. Last year, solar power plants cheaper than gas plants were built in Dubai and Colorado.

A Saudi company, ACWA Power, built the one in Dubai. We can expect to see more such plants around the world in 2016, and many more beyond.

The main reason is the astonishing cost reduction of solar power. Since 2008, the average cost of a solar power plant, be it on the ground or on a roof, has fallen more than 80%.

Analysts have called this fall "the terrordome", because it resembles a steep fairground ride on graphs, and because it would strike terror in the heart of any energy utility executive who seeks to resist change and stick to the old ways.

The cost of solar will continue to come down. Even in my cloudy homeland, where the sun rarely shines, solar energy will be cheaper than gas within three years or so.

Investors are increasingly realising that a transformation will unfold in energy markets in the years ahead.

In 2015, for example, the National Bank of Abu Dhabi produced a report concluding that the great majority of global power investment will be in renewables in the years ahead, with solar as a major player.

Another report by Deutsche Bank says solar is closing in on coal-fired power and that prices could fall a further 40% by 2020, creating $4 trillion of value in the next 20 years.

Hardly anybody saw this coming, even solar enthusiasts like me. The International Energy Agency, for example, got it horribly wrong.

They estimated the forward growth of the global solar energy market in 2000, 2002, 2005 and 2007. None of their projections exceeded 20 gigawatts by 2014. The reality was nearly 180 gigawatts.

Big energy utility companies have started to implement U-turns in their business models in the face of this.

In 2014 and 2015, E.ON, GdF Suez, Enel, and RWE all announced they would be focussing growth on solar, other renewables and energy services, and winding down use of conventional fuels.

The first oil and gas major has yet to join them, but Statoil has set up a renewable energy division, and Total has major investments in solar.

The first oil majors are moving in the same direction as the utilities because the revolution isn't just about power, but transport. In February 2015, we learned that Apple intends to be mass-producing solar-charged electric vehicles within four years. In May, we saw Tesla Motors morph into Tesla Energy, a manufacturer of batteries not just for cars but owners of buildings, and utilities. Within a week, it had taken $800 million of indicative orders for its batteries, 60% of them from industry.

Photo: © Francisco Anzola

I describe other amazing developments like this, in 2014 and 2015, in my book *The Winning of The Carbon War*, just published.

The opportunity is for Saudi Arabia, with its fuel resource (sun) and its capital from oil revenues, to become a major player in the new global solar industry: a hub in what is likely to become the biggest industry in the world, a few decades from now.

Stakes, scale, scope

Let me turn to the imperative. There are actually two of them.

The first is domestic consumption of oil for electric power generation. Few Saudi business people will need reminding of this problem, and the government is certainly well aware of it.

Too much oil is being subtracted from export potential by being burned for power. Solar, as senior government officials have themselves said, can do that job better, conserving future national income.

The second imperative is that the world community has just embarked on an orderly retreat from many uses of oil in the remaining decades of this century.

In December, I witnessed what I consider to be a unique milestone in human history at the Paris Climate Summit. A treaty was adopted there, the Paris Agreement, that holds huge transformative power.

There are three reasons for thinking this: stakes, scale, and scope.

There has clearly never been a gathering of world leaders to discuss stakes of the kind under discussion in Paris: a threat to global food and water supply, according to most participants, one that hangs over every nation on the planet.

Never in human history has there been a summit to negotiate a treaty on such a scale: one that all nations have obligations under.

195 governments took part. That is every independent nation on the planet, as listed by some agencies.

These governments elected to set aside all the other many areas where they are in dispute to face down a shared global threat, finally, and with seriousness of intent. It was a display of global co-operation without precedent in history.

The scope of the treaty involves a total system change to the lifeblood of the global economy: decarbonisation of energy.

Governments wrote into their treaty the common understanding that they probably need to accomplish this incredible about-turn within the lifetimes of most schoolchildren and indeed college students alive today.

It must seem unbelievable, for people who haven't been following the long-running climate negotiations. But it is true. And the Saudi government had the courage and wisdom to adopt this agreement along with the rest of the world.

Oil will not be departing the scene any time soon, or even within decades of now.

Even then, large amounts of oil will be needed for petrochemicals. But many oil uses will go, in the face of the global dynamics I describe above.

By then, the Kingdom needs to be the lead player not just in oil, but in solar and related industries.

Jeremy Leggett is an energy investor, entrepreneur and climate analyst. Follow him on twitter @JeremyLeggett

This article first appeared in Arabic in Saudi Arabia's nation financial daily Al_Eqtissadaih, the day after the Saudi government announced a plan to set up a two trillion dollar investment fund for the post-oil era.

OUR GLOBAL COMMONS: SAFEGUARDING THE PLANET

By Naoko Ishii, Chair
the Global Environment Facility

www.thegef.org

Big birthdays are occasions for celebration, and reflection – and reaching 25 years is a particularly important milestone. For a person, it marks the onset of full maturity, a moment at which soberly to confirm the course to an effective and satisfying adult life, while still retaining much of youth's enthusiasm and willingness to innovate. And it can be much the same for organizations.

Now the Global Environment Facility has reached this landmark moment. Set up in 1991 as a pilot programme in the run-up to the Earth Summit the following year, it has developed from being the financial mechanism for implementing international conventions agreed in Rio to the foremost champion of the global commons on which civilization depends. But, as with a person reaching his or her quarter century, its greatest challenges - and opportunities to make a difference - lie ahead.

Over those 25 years its original $1 billion programme has led to the investment of more than $15 billion, and the leverage of over $80 billion in additional resources, for more than 4,000 projects in 167 countries. Its original three partners – the World Bank, the United Nations Development Programme and the United Nations Environment Programme – have grown to a network of 18 first-class implementing and executing agencies. But the task ahead is greater than ever, and requires that the GEF continues to innovate itself.

For the global commons – on which the world's societies and economies depend - are threatened more than ever before. Species are becoming extinct 10 to over 100 times faster than at historic rates, a great dying comparable to the mass extinctions in the geological record. Thirty per cent of global forest cover has been cleared, with another 20% degraded. One quarter of the world's land area – on which 1.5 billion people depend – is being degraded, while 85% of global fish stocks are now fully exploited or have been depleted.

Climate change is no longer a future threat, but a present reality - especially for many of the poorest and most vulnerable people on earth – the result of higher levels of greenhouse gases in the atmosphere than at any time in at least the last 800,000 years.

So overwhelming are these impacts of human activities that the very biophysical processes that determine the stability and resilience of Earth are being pushed to the limit. Several, planetary boundaries within which human society has become established and thrives, have already been transgressed as the global commons that we have so long taken for granted come under irresistible pressure.

Naoki Ishii, Naoko Ishii, Chief Executive Officer and Chairperson of the Global Environment Facility (GEF).

Photo Credit: UN Photo/Zach Krahmer

Photo Credit: Pixabay

Indeed, scientists are concluding that the world has moved out of the almost miraculously benign conditions of the past 11,000 years – the only ones known to be able to support civilization, let alone a human population of 7 billion and rising – that we call the Holocene. The Anthropocene that is succeeding it is a new terra incognita, a 'no-anologue' state beyond all human experience. And yet the negative drivers that have brought about this momentous transition are growing in intensity. The world's population is expected to reach 9 billion by 2050, while consumption is increasing even faster: by 2030 the global middle-class is likely to have expanded to 5 billion people. And the proportion of humanity living in towns and cities, which topped 50% in 2009, is due to reach 75% by 2050.

On this trajectory, the threat not just to the environment but to global aspirations for economic growth, prosperity, jobs and security – risks to escalate out of control. Business as usual will guarantee disaster. Incremental change will not suffice to avoid it: the challenge is just too great for that. The only solution is transformational, systems change. There is simply no other option.

Fortunately the world last year took the first steps to begin to turn this growing tragedy of the commons into an opportunity. The 17 Sustainable Development Goals, agreed by nearly 200 countries at the UN General Assembly, clearly recognize that the health of the global commons is fundamental to development and growth, aiming to end poverty and ensure prosperity while respecting planetary boundaries. The Paris climate agreement, concluded by the same governments in December does the same, while pledging to achieve zero net emissions of greenhouses gases in the second half of the century. But, important as this is, it is only a start. Much more is needed, and it must happen fast: we are at a tipping point, for good or ill, for the world's environment and prosperity.

I believe that the GEF is particularly well placed to help catalyze the required transformation. It can, and must, play an ever stronger role as a champion of the global commons, its core mission.

The international conventions which it has long supported – on climate change, biodiversity, land degradation, persistent organic pollutants and mercury – cover most global environmental issues that impact the health of the Earth system. It also has a role in protecting the ozone layer, improving the management of transboundary freshwater resources and large marine ecosystems.

Over its quarter of a century, the GEF has accumulated a vast body of experience and knowledge.

Above all, it has a record of achieving good results on the ground. It has supported, for example, 790 projects for mitigating climate change – contributing to reducing greenhouse gas emissions by 2.7 billion tonnes – together with adaption measures to reduce the vulnerability of more than 15 million people in 130 countries.

The GEF works through a range of influencing models, each chosen to match the barriers – such as weak or inadequate policy frameworks, lack of awareness, limited access to finance, technological gaps, or failures in coordination – that must be overcome if the intended benefits are to be achieved. Choosing the right models – or a combination of them – increases the catalytic effects of the interventions that the GEF makes.

But the uncomfortable truth is that we, like the rest of the international community, are failing to reverse the sharp downward trend in the global environment. We have won battles, but the war is still being lost.

So the GEF, too, needs to change and – with the full support of its Council – it is doing so. Two years ago we published GEF 2020, the organization's first-ever long term strategy, which we are now implementing. We are switching the focus of our operations to address the underlying negative drivers of environmental degradation – rather than merely its effects – and to supporting innovative and scalable activities that cost-effectively deliver the highest impacts.

Photo Credit: Pixabay

These drivers of global environmental degradation primarily rise from three global megatrends: a growing population, a rapidly rising global middle class resulting in tectonic shift in consumption and diet patterns; and rapid urbanization which is expected to add 1 billion new residents to the world's cities. To "de-couple" the impact of these megatrends on the global environment we must fundamentally transform our key economic systems – our energy system, food production system, our cities, and our goods manufacturing system.

Many negative drivers cause many diverse problems simultaneously. Unsustainable agriculture, for example, degrades the land, fells forests, reduces biodiversity, pollutes rivers and the oceans, causes chemical contamination from pesticides, and is responsible for about a quarter of the world's emissions of greenhouse gases. Everything is connected; if one facet of the global environment is in crisis, it will affect others and ultimately lead to disruption of the whole planetary system.

So it is simply not possible to address a particular environmental issue in isolation, as if it inhabited its own silo. Instead we need to address many challenges at once. We must focus on systemic approaches rather than ones that are restricted to single sectors or technologies, as we scale up the good results achieved in national and regional projects to deliver sustainable effects that are big and widespread enough to meet the challenges we face.

Recognising this, international organizations, business, and civil society have started to rally around a new movement to safeguard the global commons. At the International Dialogue on Our Global Commons hosted by the GEF and the International Union for the Conservation of Nature (IUCN) in Washington DC in October, there was a strong sentiment that they were taking this action at a critical juncture for the future of the planet.

It's increasingly clear to me that business as usual is a guarantee of disaster. We need a course correction. We must take ourselves out of our comfort zones to bring about disruptive transformation.

The GEF will continue to be a catalyst both in enabling action and in mobilizing resources. All this is particularly important in increasing engagement with the private sector, which must be a crucial partner if transformational change is to be achieved.

The GEF must also remain the partner of choice for environmental benefits. It was established to work in partnership: its role is to provide financial support – and to help develop and design projects – while its partners implement and execute them on the ground. So productive and trusting partnerships are vital.

Much of that action must now focus on increasing resilience to the harm done by climate change and other environmental insults and on helping those affected to adapt to them.

The GEF will help countries incorporate adaptation measures into their development programmes. And it is already beginning to make direct links to helping countries to meet their Intended Nationally Determined Contributions as part of the Paris climate agreement. Though concerned with global issues, we know that country ownership is the key to success: after all, action takes place at national and local levels.

The aim must be to make the global environment everybody's business. For this is not a matter of safeguarding natural systems alone, important as that may be. It is the best – indeed the only –path to prosperity. It is not just about avoiding disaster, but providing much greater and better-shared growth.

As the only mechanism that insists that projects generate global – and not just local and national – benefits, the GEF is, and will remain, a champion of the global commons. It will continue to insist that there can be no separation between development and environment, that safeguarding these commons is, quite simply, the wisest investment we can make.

Anniversaries should be more about looking forward than back. And, grave though the threats may be, a poverty-free future in harmony with the planet is within our grasp. We need to act swiftly, and at scale, to realize it – and that is just what the GEF intends to do.

LES EAUX
MINÉRALES
D'OULMÈS

NOS 5 ENGAGEMENTS
AU SERVICE DE LA PROTECTION DE LA PLANÈTE

ÉCO-INNOVATION

L'innovation est au cœur de notre ADN. Aujourd'hui l'enjeu consiste à la mettre au service d'une plus grande responsabilité environnementale. Ainsi nos chercheurs ont réussi à remplacer 30% du PET d'origine pétrolière par un PET d'origine végétale, à travers l'utilisation des résidus de canne à sucre. Cette expérience a inscrit Les Eaux Minérales d'Oulmès comme étant la première entreprise au Maroc à développer et mettre en œuvre du PET végétal dans son processus de fabrication.

"EAU"-CONOMIE

Nous avons pris conscience de l'importance de la mise en œuvre de solutions innovantes pour que notre capital eau perdure génération après génération.
En respectant la nappe phréatique et son temps de régénération, en récupérant les eaux de lavage en amont et en traitant les eaux usées en aval, nous misons sur un meilleur avenir.

ÉCO-CONSOMMATION

Nous savons que les ressources pétrolières ne sont pas infinies et nous nous devons de trouver des solutions économes.
Ainsi, en réduisant le grammage de nos bouteilles, mais aussi des étiquettes et des bouchons, nous œuvrons pour être le moins dépendant possible aux énergies fossiles.

ÉCO-ENERGIE

En investissant sur l'efficacité et sur l'efficience énergétique grâce à des compteurs nouvelle génération et des machines éco-énergétiques, nous consommons intelligemment et nous maîtrisons les coûts sur l'ensemble de nos chaînes de production.

ÉCO-DISTRIBUTION

Nos experts ont optimisé et rationalisé les circuits de livraison, nous permettant ainsi, de réduire notre consommation de carburant et par conséquent nos rejets de CO_2 dans l'atmosphère.
Par ailleurs, nous avons réorganisé les circuits de ventes afin d'augmenter notre productivité et maximiser notre efficacité.

WHERE AMBITION MEETS REALITY

RENOVATE BUILDINGS TO SAVE ENERGY AND THE CLIMATE

PHILIPS

By Harry Verhaar,
Head of Global Public and Government Affairs, Philips Lighting

http://lighting.philips.com

In the history of climate change, this year's record book gives pause for thought. The National Aeronautics and Space Administration (NASA) reports that July 2016 was the hottest month since scientists began keeping records in 1880. The planet is heating up at a faster pace than at any time in the past 1,000 years. And that's not all.

At the same time, the global population is growing – to almost 10 billion by 2050, according to United Nations estimates. More people need more resources, especially in cities where two-thirds of us will live. The combination of these mega-trends poses a stark challenge to humanity. To meet rising demand we will need to foster new economic models of low carbon growth.

Energy efficiency is the low hanging fruit: an easy win among the raft of measures needed to tackle climate change. Today, energy efficiency improves by about 1.5 per cent every year. Translated into an equivalent reduction in coal-fired power stations, simply doubling the annual rate of improvement in energy efficiency to 3 per cent per year would set us on a sustainable path.

Philips Lighting CEO Eric Rondolat has called this "The 3% Syndrome". In terms of reducing carbon emissions, greater energy efficiency could deliver fully two-thirds of what needs to be done to meet the bold commitments agreed at COP 21 in Paris. This incremental gain in energy efficiency improvement would unlock huge benefits – for the planet, its people, business and society.

Connected LED

To meet the needs of a growing population, we need to consume resources more efficiently. To create successful cities, we need clean energy and smart infrastructure. Fortunately, our response to these challenges is helped by a fourth mega-trend: Digitalization. The transformative powers of connected technologies offer a myriad of ways to make our world cleaner and smarter.

Lighting is a significant part of the answer. By 2030 for example, the global tally of light points will have increased by 35% to 60 billion. Simply adopting LED in place of incandescent lighting

Philips Lighting (Euronext Amsterdam ticker: LIGHT), a global leader in lighting products, systems and services, delivers innovations that unlock business value, deliver rich user experiences and help improve lives. Serving professional and consumer markets, we lead the industry in connected lighting systems and services, leveraging the Internet of Things to transform homes, buildings and urban spaces. With 2015 sales of EUR 7.5 billion, we have approximately 36,000 employees in over 70 countries. News from Philips Lighting is located at: www.newsroom.lighting.philips.com

would reduce energy consumption by a massive 53%. Intelligent lighting for smart buildings and smart cities can further boost those savings by up to 80%. So connected LED lighting is a form of energy efficiency that pays for itself in cost savings.

Bluntly stated, we can no longer afford the status quo. Faster renovation of existing infrastructure is long and urgently overdue. In September 2016, at Climate Week, New York City, Philips Lighting issued a joint call to action with The Climate Group and World Green Building Council. To boost energy efficiency in buildings we urged business and governments alike to adopt new targets for the private and public sector:

- All new buildings to be LED or equivalent energy-efficient lighting by 2020
- All street lighting to be LED or equivalent by 2025
- All corporate buildings to be LED or equivalent by 2030

Walking the talk

Shared conviction is a necessary condition for change. By walking the talk – in our own business, and through our offer to customers – we believe it is possible to build consensus on how to achieve low carbon growth. So what exactly have we promised? And with hindsight, what have we delivered to date?

Ten years ago, Philips called for a global ban on incandescent lamps – the product on which today's global technology company was founded. In December 2006, these bulbs accounted for two-thirds of our sales volume in a global market that was stable at 12bn units per year. Today, the logic of switching from incandescent to energy-efficient LED is widely accepted. By end-2016, the global incandescent lamp market is forecast to at just 4bn units, a two-thirds (and ongoing) decline in just a decade.

Spanish landmarks sparkle with cloud-based Philips connected lighting systems.

In 2012 we made our first call for the renovation of street lighting at the Rio+20 summit, on a theme of sustainable development. A call renewed by our partners, at Climate Week NYC, this year. In 2016, we answered a Global Lighting Challenge from the 7th Clean Energy Ministerial in San Francisco, with a pledge to sell 2 billion LED light points by 2020.

To set these statements in context, our record should not be seen in isolation. In lighting, the transition to connected products, systems and services brings new opportunities to address an urgent global imperative. Digitalization of light means new ways to live, work and relax; to grow crops, heal the sick, power industry and build cities. My point is that we have risen to tough challenges before, and we can do so again.

Technology evolves, but the innovation we need is already with us. By 2020, 80 per cent of Philips Lighting revenues will come from sustainable products, systems and services; our global operations will be carbon neutral, and 100 per cent of our energy will be from sustainable sources. These and other commitments lie at the heart of our *Brighter Lives, Better Planet* sustainability strategy.

For the private sector at large, it is important to share the lessons of experience. In the connected world, bringing innovation to scale is really a matter of shared purpose and creative partnerships. For example, our partnership with Cisco Systems, to deliver Power Over Ethernet, has made possible office lighting powered through data cables. For smart cities, our go-to-market alliance with Vodafone has transformed humble street poles into a new form of digital real estate, loaded with sensors and multi-tasking connectivity.

Seizing opportunity

Globally, lighting accounts for about 15 per cent of all electricity consumption, which we project to decline to 8% in 2030. Harnessing the potential of smart buildings – homes, industry and offices – is also smart public policy. Doubling the rate of energy efficient gains would create a hydra-headed stimulus for economic and social development. Benefits include creating six million new jobs and cutting annual energy costs by Euro 2,300 billion by 2030.

At COP22, world leaders are tasked with finding concrete next steps. Our best hope is for a mix of carrot-and-stick measures with particular emphasis on policy and financing. Next to bold targets on energy efficiency, equivalent at least to an annual improvement of 3 per cent, we urgently need more ambition to drive renovation in buildings.

As it stands the renovation rate for buildings currently stands at about 1.2%, far short of what is required. Accelerated renovation, lifting the rate to around 3% per year, will be a key factor for success. Obviously this requires enabling policies in building codes and performance-based procurement, as well as fiscal measures.

Research by Architecture 2030, a campaigning consultancy, shows that by regulating for renovation of commercial buildings at the point of every change in ownership, we could double current rates of renovation to 3% per year. Let's explore this avenue and make it happen. I see only benefits for owners and real estate (more valuable future-proof buildings) and for occupants (more comfortable places to live and work), and a shift from operational (energy) expenses to slight rent increases that is cost-neutral overall.

Soccer at night; the fight against light poverty in Mathare, Kenya.

Light as a Service - Around the clock

On **financing** we essentially need to leverage the lower cost over lifetime of the building to take away the renovation budget hurdle. It is amazing to hear from cities and companies that they have projects but no money, and from banks that they have money but no projects. In other words, if we want to finance change, we need to change finance.

Here we are greatly helped by the fact that LED lighting is getting smarter and connected, as it allows us to move to new business models. Instead of invoicing boxes with lamps, we can now lease **lighting as a service** in larger projects. I believe LED lighting is just one part of the broad transition to more circular, more economical business models.

In this sense, energy efficiency is not just our business; it is everybody's business. A transition to LED would save some Euro 272 billion in energy costs, equivalent to a reduction of 1,400 megatons in carbon emissions or shutting down 1,250 power plants. At household level, energy bills would fall by one-third. This is possible now. A new world order of low carbon growth. An opportunity – for people and planet – that we cannot afford to miss.

Philips LED horticultural lighting and LED software enables growers to change light recipes to suit different crops.

AAIB: LEADING EGYPT'S SUSTAINABLE FINANCE

www.aaib.com

Half a Century of corporate, investment and treasury services in Egypt and the Middle East region, Arab African International Bank (AAIB) acquired the maturity and insight to realize the prerogatives and true meaning of growth. As early as 2003, AAIB embraced an aggressive growth strategy which instantly found expression in material and non-material terms. It was only then that the Bank realized that growth is not only expressed in numbers but should be expressed in a moral mission towards the society. This philosophy of growth sparked a journey that gradually weaved environmental, social and governance concerns into the realm of finance. From conceiving strategic philanthropy, to integrating ESG into business to starting an industry move in Egypt towards sustainable finance, AAIB has set the momentum and dynamism to trigger s a new age of finance.

AAIB …A trendsetter towards sustainable finance in Egypt and the Middle East
With a history of solid banking tradition since its establishment, AAIB succeeded to position itself as Egypt's fastest growing bank in terms of size and profitability, with a compounded average growth rate for deposit and loan portfolios that has consistently outperformed market norms. These growth rates substantiated AAIB's vision: To be the leading Financial Group in Egypt, providing innovative services with a strong regional presence and establishing itself as the gateway for international business into the region.

Our concept of "Value Creation" to all stakeholders was conceived as early as 2006 and has continued to be a key organizing concept guiding the bank as it pursued its growth strategy. This concept remained an expression of the bank's proprietary understanding of the philosophy of balanced growth. The years testified the soundness of the notion. As AAIB continued to add value to the society and the environment, AAIB has remained a fast growing financial institution and achieved a track record of performance with renowned returns on shareholders' equity.

AAIB's experience in embracing sustainability materialized into a series of pioneering initiatives beyond the mainstream that gradually succeeded to set a trend in the financial sector in Egypt. The journey originated in 2003 and unfolded across three key stages: Stage (1) Strategic Philanthropy towards the community (2) ESG Integration into core business operations and sustainability reporting, and Stage (3) Policy Advocacy & Industry Movement.

AAIB in brief

Established by Special Law as a Joint Venture between the Central Bank of Egypt (CBE) and Kuwait Investment Authority (KIA) - each party holding a 49.37% stake, AAIB was incorporated in 1964 as Egypt's first Arab multinational Bank.

- No. of branches: 82
- No. of employees: 2,000
- Regional presence: Dubai, Abu Dhabi & Beirut
- Subsidiaries: AAIH, AAIM, AAIS, AAIMF, AAIL

www.aaib.com

AAIB Awards & Recognition in CSR & Sustainability:

- 2016 - Best Bank in CSR in the Middle East, Euromoney *(Dubai)*
- 2014 - Golden Shield for Best CSR, Arab Organisation for Social Responsibility, *(Dubai)*
- 2014 - Best Green Bank in Egypt, CFI *(London)*
- 2010 - Arabia CSR Network, *(Dubai)*
- 2010-2016, Best Practice, Global Compact International Yearbook annual publication

Stage 1: Strategic Philanthropy
AAIB has been the first bank in Egypt and the Middle East to establish a foundation for social development in the fields of health and education, We Owe it to Egypt Foundation. As such, AAIB set a trend that opened the way for other financial institutions to establish their own foundations and contribute to health and education in Egypt.

In education, the Bank managed to bridge the gap between banking and the academic sectors through initiating a one-of-a-kind educational prototype, The Arab African International Bank Award. It is an annual banking competition for university undergraduates to innovate a banking service and product.

Stage 2: ESG integration into core business and sustainability reporting
AAIB has been a forerunner in joining and adopting various international frameworks and organizations to help integrate sustainability into its business operations in a systematic manner. As early as 2005, AAIB joined and started reporting to the UN Global Compact. Across 2014-2016 AAIB has been on of few selected global banks acknowledged in the latter's annual yearbook.

Responsible Lending was promoted in AAIB's corporate banking and investment practices, when the Bank joined the Equator Principles in 2009, to assess environmental and social risks within its project lending activity. Annual reporting on bank's portfolio status has been another level of commitment to indicate how financial performance is linked with social and environmental impact.

In 2007, AAIB has also been the first in Egypt to join the London Benchmarking Group (LBG); to measure the bank's community investment and impact and the social return on its investments.

In support to Climate Change, AAIB has been the first bank in Egypt to measure its carbon footprint in 2012. A group-wide awareness and educational carbon footprint campaign has been launched internally addressing all bank staff from top management to support staff members. This facilitated the Engineering, IT and Admin Support Divisions embracement of a carbon emission reduction strategy as part and partial of their annual business agenda starting 2017. Recycling, double side printing, centralized operations, and LED lighting system across AAIB's premises are in the implementation pipeline.

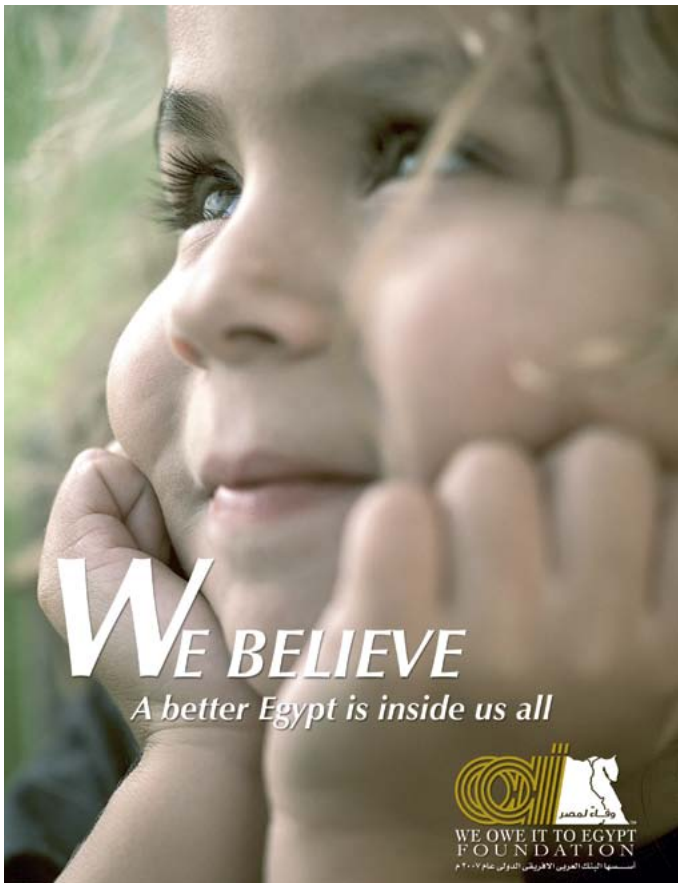
While AAIB published its first sustainability report in 2010 based on some GRI components, currently the bank is about to publish its G4 based sustainability reporting for more holistic disclosure on ESG issues.

MOSTADAM…An Industry Movement
Stage (3): Policy Advocacy & Industry Movement "MOSTADAM"
Accelerating a bank industry movement towards the embracement of sustainable finance in Egypt and the region. In 2012, AAIB founded MOSTADAM (Arabic translation of sustainable) platform, in partnership with the UNDP and the ECRC. The platform aims at accelerating the strategic transformation of a traditional financial sector into one conforming with innovative sustainability principles. It acts as Egypt's focal point for exchanging sustainable finance best practice and knowledge with peers.

Hassan Abdalla CEO of AAIB awarded Best Bank in CSR in the Middle East Award, Euromoney.

In 2015, in partnership with the CBE's educational arm, the Egyptian Banking Institute (EBI), MOSTADAM launched the first Certified Training Program introducing sustainable finance, certifying 35 professional bankers as sustainable finance champions within the industry representing 11 eleven (11) banks across the region with presence in Egypt. Another key strategic partnership with Frankfurt School of Finance & Management in Germany was established in2016, to provide two certified modules on Renewable Energy Finance, and SMEs Finance.

There is much room for the financial sector to play a crucial role in bringing about sustainable development creating winning synergies that integrate the social, environmental and economic dimensions. AAIB believes that the Egyptian financial sector is well poised to take the lead and trigger the industry transformation.



ALUMINIUM STREET LIGHT POLES AHEAD IN GREEN RACE

Metro Smart International
www.metro-smart.com

www.metro-smart.com

By Christine Nash
Director / CEO Metrosmart International
Director / CEO Polestar International

A simple switch from steel to aluminium lighting poles can save energy, costs and will last for a century.

Since the commercialization of aluminium in 1851, 75% of aluminum ever produced is still in use either in its original form or as recycled product. It is the most common element on earth and along with glass is the greenest sustainable and most recyclable product in history. In comparison iron is the fourth most abundant element on Earth, comprising about 5% of the Earth's crust by weight, yet makes 1/3 less product than aluminum and uses 70% more energy in its life cycle. One ton of aluminum produces 3 times more product than one ton of steel. In 2015 the United Nations presented 17 Sustainable Development Goals and it was agreed by 195 Nations at the COP21 Paris agreement to combat climate change with these suggested global goals.

Aluminum with LED strips on the length of the spine of the poles, Education City, Doha, Qatar.

Two of those goals are linked to business and industry:
1) Industry, Innovation and Infrastructure and
2) Partnerships for those goals.

Historically street light poles were made either from timber or steel. In most parts of the world both are still used. There are vested interests at play such as the steel manufacturing plants as well as consultants who have specified the steel pole for so many years they see no reason to change. The hip pocket of the contractors is the other vested interest as there is more money to be made out of the cheaper steel galvanized and or painted pole than from the more expensive anodized aluminium street light pole. Municipalities and local governments have a lot to gain from switching to aluminum anodized street light poles as they only have to pay for them once in 100 years whereas a steel pole has only a twenty five year life cycle.

Unfortunately this is in conflict with the interests of the contractors who stand to gain a bigger profit from buying a cheaper product on which they can put a bigger profit margin particularly when that product will require regular maintenance and replacement which the aluminum pole does not. So if the contractor cannot be given financial incentives to buy aluminum instead of steel poles it needs to be so legislated or specified by consultants and then the authorities, be they the Roads & Transport Authorities or Municipalities need to act on their advice. Happily, this is now occurring more and more frequently across the developed and developing nations.

When considering Sustainability both economic and environmental factors have to be taken into account. One of the biggest factors responsible for adding to climate change is the built-in obsolescence in so many products. Street light poles are a functional and essential piece of road infrastructure not a fashion item it is therefore imperative that they be manufactured to last.

There is a heavy economic cost and environmental cost to re-manufacturing, removing and replacing a steel streetlight pole every 20 -25 years. A single purchase of an extruded aluminium pole will last 100 years. The maintenance cost of painting and repainting regularly such poles would cover the cost of buying streets of new and multifunctional aluminum poles requiring no maintenance or replacement.

It is estimated that 20 million poles are replaced annually in the USA alone. Governments must be proactive and legislate for products that will outlive even future generations. Aluminum will do this and even then is fully recyclable into new products. Why stop there? Innovation equals evolution. The inherent properties of extruded aluminium allow for innovations not possible with steel poles. MSI's innovative aluminium street light pole acts as vertical real estate that allows the housing of all street infrastructure on the one pole.

In addition to street and sidewalk lights it is capable of housing traffic lights, street signs, digital advertising, parking metres, electric charging stations G4 Lan microcell technology bicycle racks, trash bins and much more. Thus reducing the number of poles and street signs in the streetscape. This not only reduces street clutter, visual pollution but also limits the number of crash hazards for vehicles.

The Second of the two goals we at MSI were already engaged in for a number of years before the Paris summit is partnerships between corporations.

Co-operation versus Competition

Women's rights activist Margaret Fuller wrote, "If you have knowledge let others light their candles in it".

So it is with Metrosmart International. We practiced what we preached by collaborating with a like -minded company such as SAPA Pole Products, the biggest Aluminum manufacturing company in the world, to manufacture our multifunctional aluminum anodized street light poles in their plant in the Netherlands. Simultaneously we promoted their specialist solar pole the Flexsol Soluxio pole in the Middle East where we are based in the UAE and Qatar.

In addition the four year co-operation between MSI and the Qatar Foundation has resulted in innovative designs and materials for street light poles which have a long life cycle, are both functional and beautiful. Innovative design,

Aluminum pole with LED lights, Morocco.

sustainability, functionality, beauty at an affordable cost is already here. It is in our shared collective experience and imaginations, thus engaging in collaboration with competitors can be an inspirational, rewarding, innovative and profitable exchange that lights everyone's candles! We need to change our competitive psyche and engage in co-operation to the benefit of all.

In addition to environmental sustainability Governments around the world are now looking at reducing the number of road deaths caused by cars crashes into steel poles. Consultants are already specifying wherever possible the use of passive-safe aluminum poles. Statistics show that the majority of those killed in such road deaths are young men under the age of 25. Furthermore 70% of those who hit steel poles die. The cost to the community is immeasurable. On the other hand those crashing into passive-safe poles live to see another day.

Various parts of the EU and the USA have already legislated for such safe poles and now many Middle Eastern countries are following suit. The United Arab Emirates and the State of Qatar are but two examples of governments leading by positive example. Change is an evolutionary not a revolutionary process but as long as it is visibly occurring which it is, particularly with India and China now on board there is hope for our planet and our future generations.

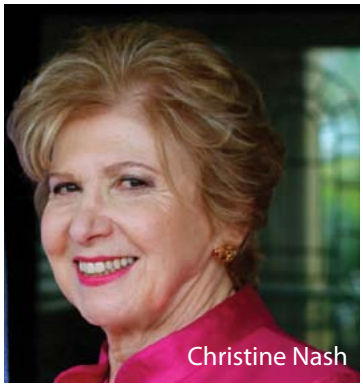
Pictures: left to right:

Bottom left – **Soluxio Solar Pole**

Center top – **Monument Light, Singapore**

Center bottom – **Central Markets, Abu Dhabi**

Right – **Rabat, Morocco**



Christine Nash

- Recipient of the World Women Leadership Achievement Award 2016
- Author of: *"How Metrosmart International Aims to make the World a Brighter Place"*
- Published in G7 Climate Change The new Economy May 2016
- Member of the Year 2015 in Bristol Who's Who.
- Businesswoman of the Year for the UAE 2015 as voted by Bristol Who's Who

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At AkzoNobel, we believe that innovation can enable cities to "do more with less" and turn the urbanisation challenge into an opportunity to create more "Human Cities" for people and society in general.

Today, nearly four billion people live in cities. This number is expected to increase by 2.5 billion by 2050, with over 90 percent of this growth being in Asia and Africa. Cities will need to accommodate spiralling urbanisation, service the needs of citizens and stimulate commerce and investment to create jobs, all within the constraints imposed by climate change and the need to meet greenhouse gas emission targets.

As one of the world's leading paint companies – with globally recognised brands such as Sikkens, Dulux, International and Interpon – AkzoNobel has established its global Research, Development and Innovation (RD&I) centre for exterior wall paints in Singapore. This garden city, in the centre of South East Asia, is a stimulating hub for innovation. The high growth economy of the region increases the need for innovation and AkzoNobel launches essential new products every year in the exterior wall paint category.

Our research programs are mainly focused on sustainability, energy efficient solutions, long-term durability and protection, and aesthetics for exterior walls. Guided by our Planet Possible approach to "doing more with less", and underlined by our #1 ranking on the Dow Jones Sustainability Index, AkzoNobel is constantly striving to develop better and more sustainable products and technologies in order to make people's lives more liveable and inspiring.

Environmental footprint

Reducing the environmental footprint of our coatings is a clear focus of our research programs. We are striving to increase the use of renewable materials and optimise our use of lower carbon footprint raw materials. Another, and perhaps less obvious, way to reduce footprint is through increasing the durability of exterior wall paints.

Enabling longer maintenance and repainting cycles helps to reduce building maintenance costs and environmental impact. This is achieved by lowering the use of resources for the paint itself (which will last longer), as well as reducing water use due to less need for cleaning.

Both climate and human activities alter the appearance of building façades through UV-driven colour fading, erosion, cracking, flaking, dirt and dust pick-up, fungal and algal growth. In tropical urban environments in particular, most exterior wall paints currently last around

Azko Nobel is a leading global paints and coatings company and a major producer of specialty chemicals. We're in your mobile devices, the cars and roads that move you around and are an essential part of the products that keep you healthy.

Headquartered in Amsterdam, the Netherlands, we have approximately 45,000 people in around 80 countries, while our portfolio includes well-known brands such as Dulux, Sikkens, International, Interpon and Eka.

www.akzonobel.com

five to eight years. We are developing solutions to extend this durability to at least ten years and beyond.

Our research programs are focused on developing new polymer technologies to best balance weatherability and softness to create products with a longer durability than standard products used on building façades. In combination with durable pigments that do not fade under strong UV, and smart formulation modelling, we can deliver extended repainting cycles. Beyond traditional coatings, zero-VOC powder coatings for exterior façades can last for 20 years or more.

Deliver energy efficient solutions

Cities also experience the "urban heat island effect", especially those cities that are subject to temperatures of 35°C and above throughout the year. This results in growing energy consumption, which is needed to cool down buildings. What many people are unaware of, however, is the fact that the materials used on exterior façades can have a significant impact on the temperature inside a building.

When infrared radiation from the sun strikes the surface of a building, some of it is reflected and some is absorbed in the form of heat. This causes the exterior wall of the building to increase in temperature, and this heat is subsequently transmitted to the interior of the building. Thanks to innovative technology and smart formulation modelling software, our researchers have developed strategies to increase the solar reflectivity of our coatings.

We've carefully managed the pigments we use in our paints to create striking colours while at the same time significantly increasing the amount of infrared radiation which is reflected by building façades. The result is a difference of up to 5°C between a façade coated with a normal exterior paint and one coated with our Dulux Weathershield Keep Cool products. Computer simulation modelling has also demonstrated energy cost savings of up to 10 to 15 percent, depending on the type of building. And this is achieved simply as a result of less energy being required to cool the inside of the building. This type of cooling effect is available in a variety of decorative and performance coatings within the AkzoNobel portfolio.

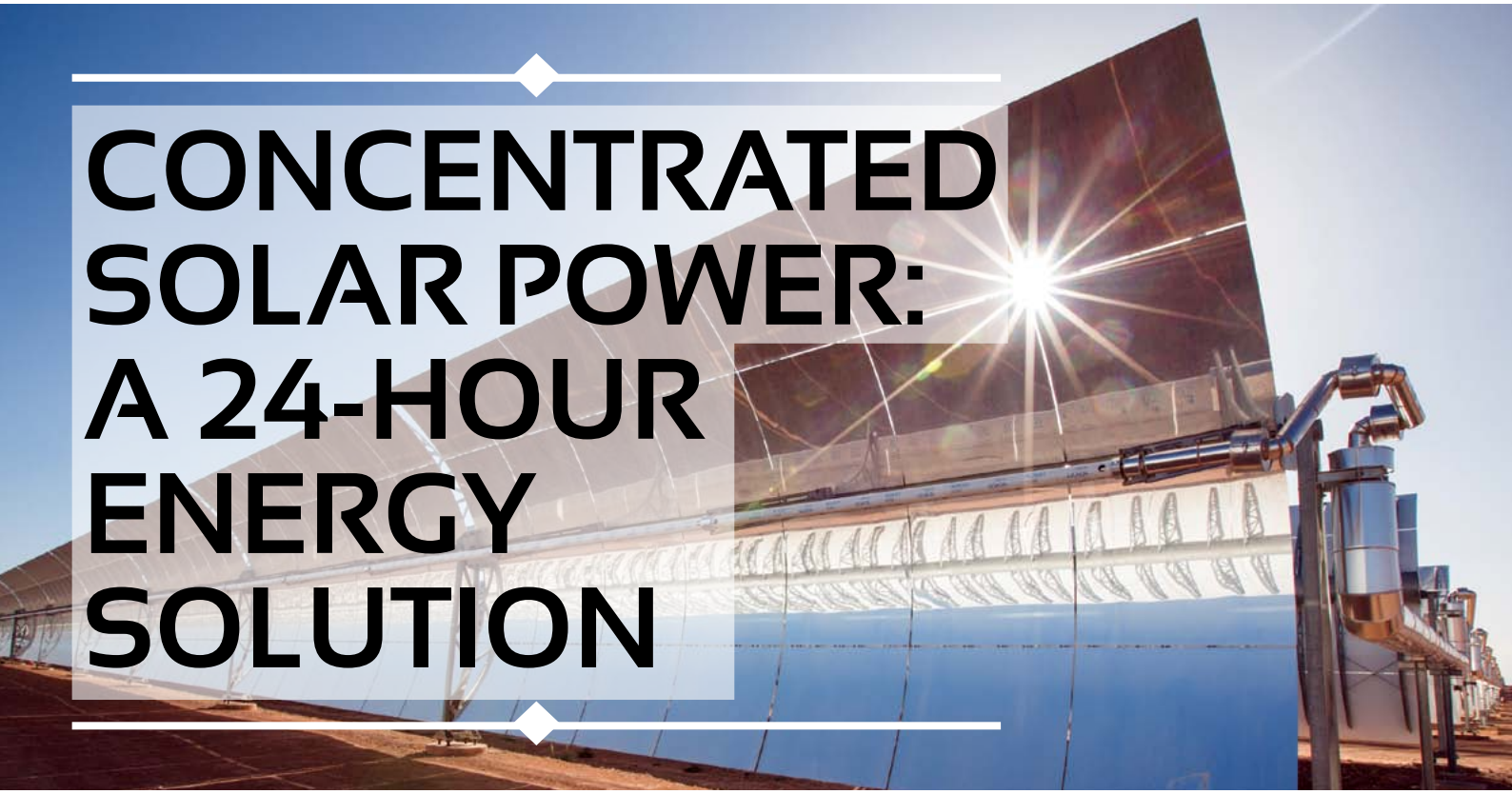
Clean air

Air pollution is another challenging urbanization issue, especially in growing cities in emerging markets. Harmful air pollutants such as nitrogen oxides (NOx) are recognised health and environmental issues being faced by urban communities. NOx (NO, NO2) are predominantly generated by the combustion of nitrogen in vehicle engines. NOx pollution is flagged as a contributory factor in respiratory diseases and can react with many other chemicals to create further, harmful pollutants.

Photoactive Titanium Dioxide (TiO2) is a well-established technology for depollution and self-cleaning. When UV radiation strikes a photoactive TiO2 molecule, highly reactive free radicals are formed. These radicals react with organic materials and can decompose air pollutants into less harmful materials. This reactivity can also decompose other unwanted material, such as dirt, helping to maintain cleaner façades for longer. Incorporating photoactive TiO2 into coatings is not an easy task, because its reactivity is so high that it can even degrade the paint film itself.

Our researchers are working on technologies to stabilize depollution paints without compromising general coatings properties, particularly with high durability in harsh climatic conditions such as tropical areas. The ultimate aim is to offer customers around the world a technical solution for covering millions of square meters of façade with depollution solutions, with the potential to help clean millions of cubic meters of air.

One of our clear commitments as a company is to help create more Human Cities around the world. We are using our three key strengths – essential ingredients, essential protection and essential colour – to energize communities and make them more liveable and inspiring. Our researchers and scientists will therefore continue to search for new and innovative ways in which coatings can increasingly play a more significant role in addressing the great urbanization challenges that lie ahead.



CONCENTRATED SOLAR POWER: A 24-HOUR ENERGY SOLUTION

Given commitments made by the leaders of 195 nations at Cop21 in 2015 to decarbonise electricity generation by the year 2050, a significant component of the energy mix of the future must utilize the heat and the light radiated by the sun.

By Paddy Padmanathan
President & CEO, ACWA Power

http://acwapower.com/

While it is the renewable energy generated by sunlight, the photons from the solar rays that has captivated the imagination and caused so much excitement in recent times by producing electricity through the photovoltaic (PV) process at ever reducing cost, it is also this electricity generated by the PV process that has caused much debate about the real viability of solar energy being a reliable solution given the intermittency of this resource.

In simple terms, given that PV generated electricity cannot be produced while there is no sunlight and without having access to affordable utility scale battery storage solutions PV generated electricity will not be available at night or even during daylight hours when the light is diminished due to cloud cover.

Then there is heat, the other source of energy from sun light. Using a technology to concentrate that heat to generate temperatures as high as 1,000 degrees Celsius, we can then store the heat in a molten salt medium and draw upon it as and when required over a 24-hour period.

The heat is then used to generate electricity by driving a steam turbine and generator, allowing us to break away from the intermittency constraint of the PV technology. So all of a sudden, solar energy via this Concentrated Solar Power (CSP) technology does provide considerable promise to make available electricity as and when we need it, to use as and how we want to utilize it.

Cost competitive?

Given we do not use the same amount of electricity at all hours of the day and thus the demand itself is intermittent, a supply system needs to be not only flexible but can be designed to incorporate the full range of energy generating sources available.

While today most needs are fulfilled by fossil fuel-based energy generating sources, we now have a range of renewable energy technologies that can progressively takeover and in time fully replace

fossil fuel-based generating solutions. In this future energy mix, both PV and CSP electricity are complementary as depicted in the daily demand picture below for a real system during a 24 hour period.

The challenge with CSP technology unlike in the case of wind and PV is that it has not yet become cost competitive compared to fossil fuel based alternatives even in the parts of the world where the resources are abundant and land costs are minimal.

The reason for this is rooted in the history of how this technology developed and was deployed. Considerable research, development and innovation went into PV technology in the early days to provide power solutions for space exploration and satellites. It also saw land-based utility-scale application and roof-top application take off as concerns around climate change took root. Greater capacity was implemented and newcomers stepped up to innovate, driving down costs to the level they are at today with just short of 400GW of PV generation capacity having been implemented around the world and a rapidly growing market having been established.

Morocco leads the way

There was no particular reason for CSP-based technology to develop until recent times when the ability to economically store heat via the molten salt medium was recognized. Even then, in order to encourage the development of this technology, certain countries offered a feed in tariff encouragement which indeed helped to kick start deployment but provided little incentive to innovate and reduce cost.

CSP technology slowly evolved to the point of having been deployed at a level of 3GW, less than one hundredth of PV deployment levels by then at a cost of 35 US cents /kWh. In 2011 Masen, the then newly formed renewable power procurement agency in Morocco, launched a pioneering and visionary CSP procurement program using a transparent competitive tender process.

The first phase - NOORo1, a 160MW CSP plant with three hours of molten salt storage capacity at Ouarzazate, a plateau surrounded by the Atlas mountains - attracted three bidders including a consortium led by ACWA Power who delivered a tariff of 18.9 US Cents/kWh, 24% lower than the second bidder thus resetting the tariff outlook and relevance of CSP technology.

The NOORo1project is now constructed and has been dispatching electricity since the beginning of 2016.

Mitigation potential

In 2011, ACWA Power also participated in the second round of the government of South Africa's Renewable Energy Independent Power Producers' Procurement Program managed by the IPP Unit at the Treasury of the Ministry of Finance at a site at Bokpoort near the city of Upington.

At Bokpoort, we delivered another pace-setting tariff for a 50 MW CSP plant with nine hours of molten salt storage. This project is already now operational and is demonstrating the versatility and power of CSP technology. Within the first month of its commercial operation, the newly inaugurated plant served more than 200,000 households had produced electricity generated using the heat of the sun for a continuous period of 161 hours, equivalent to almost six days, day and night – a new African record.

At Morocco, the activity at the NOOR Complex - which when fully developed by 2018 will become the largest solar facility in the world at a single site - has moved into the construction of the second phase.

In 2015 ACWA Power-led consortiums won both the plants to be constructed at this second phase; a 200 MW parabolic trough based CSP plant with a storage capacity of seven hours and a 150MW solar tower based CSP plant with a storage capacity of eight hours. Upon completion, this complex will power more than one million homes and will save one million tons of oil equivalent (TOE) and avoid the emission of 3.7 million tonnes of CO2 per year while reliably delivering solar energy during the day and well into the night.

Increasingly, the Independent Power Producer (IPP) model of contract is helping to achieve cost reductions on each successive project as more capacity is procured, greater innovation is brought to bear and new participants enter the supply chain generating a competitive market.

Retaining value

IPP transfers the responsibility to private sector to design, build, finance, construct and operate the power generation plants where the payment for the generated electricity is only made as the energy is dispatched with the private sector. This means the private sector takes all the risks such as technology, timely completion of new build, cost overrun in capital and operating cost and even the resource risk - with the public sector only taking demand risk as the energy is provided on long-term take or pay contracts and with the use of a transparent competitive procurement process, where the tenderer is given the opportunity to offer the most competitive price instead of offering capacity within a preset feed in tariff.

Also, as is being demonstrated through the South African REFIT and the Moroccan renewable energy programs, well implemented, transparent and competitive procurement processes are changing the game on renewable energy project sourcing. Procurement processes that define the required objectives of the transition to a green economy are not only leading to renewable energy being procured at some of the lowest costs achieved in the world but also at the same time are achieving vital supplementary objectives as meaningful industrialization, economic development, value retention within country and employment creation.

In simple terms, both the models are achieving much more than simply renewable Megawatts without impacting cost of the delivered energy. By relentlessly focusing on a mission to reliably provide electricity and - where required - desalinated water at the lowest possible cost, ACWA Power is consistently delivering tenders for providing bulk capacity on long-term contracts which are typically 20% lower in cost than the next competitor. Regardless of which country, or the size of project, we support the development of CSP technologies to be capable of being able to compete shoulder-to-shoulder with fossil fuel alternative generation solutions for reliable electricity for use both at day light hours and at night.

With a portfolio of over 1000MWs in either operation and/or construction and with a pipeline of another 1,000 MWs to deploy, ACWA Power is proud to be a leading developer, owner and operator of renewable energy in the emerging markets, contributing to achieving the commitments made in Paris last December.

AGROBANCO: ECO-FRIENDLY LENDING

Agrobanco
Servicios Financieros para el Perú Rural

www.agrobanco.com.pe

By 2019, Agrobanco's green portfolio will increase to nearly 26% of its total lending.

Peru has 28 of the 32 existing climate types in the world. After Bangladesh and Honduras, it is the third most vulnerable country to climate change, suffering the effects of the increasing amounts of Greenhouse Gases (GHG).

Change of land use from forest to agriculture and intensive shifting cultivation, which includes the livestock sector, are responsible for more than 60% of GHG emissions in Peru.

Reduction of GHG emissions in agriculture, forestry and other land use are essential parts in the world's fight against climate change.

Peru is committed to this global goal and is adopting domestic policies accordingly.

In that sense, Agrobanco, as a development bank focused on the agricultural sector, plays a crucial role facing this challenge.

In 2013, Agrobanco initiated the process of becoming a Green Bank through financial and operative activities, using mechanisms aimed at protecting the environment, while strengthening business efficiency with a sustainable entrepreneurial approach.

The financial process integrates social and environmental aspects through the efficient use of our resources (water, energy, paper), good practices and the implementation of green technologies, incorporating the concept of Climate-Smart Agriculture, on its way to achieve sustainable development.

The impact of Agrobanco's work is based on:

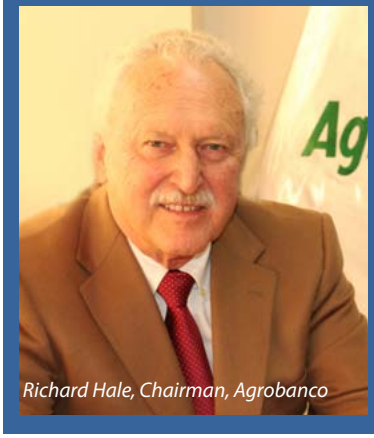
- Reducing credit risk by increasing the producers' productivity.
- Accessing better funding conditions from multinational institutions.
- Creating new markets and business opportunities for producers.
- Minimizing environmental and social conflicts.
- Better positioning among public interest groups to stress the importance of Social Responsibility.
- Eco-efficient practices.

Agrobanco endorses the Peruvian state's commitment to comply with its Intended Nationally Determined Contribution (INDC), a response created to manage climate change at a global level, and which sets forward a series of long term mitigation and adaptation goals.

A committed Chairman of the Board

Mr. Richard Hale, Agrobanco's Chairman of the Board, is a convinced promoter of the bank's transformation into a Green Bank, using a mid- and long-term approach.

"One of our goals for Agrobanco is to be a pillar of the green economy in Peru. Agrobanco is becoming a model, going well beyond its traditional role".



Richard Hale, Chairman, Agrobanco

Therefore, Agrobanco is implementing a series of measures to become a Green Bank, such as:

- Implementing an Environmental and Social Risk Management System - SARAS (its acronym in Spanish), with the support of the European Union.
- Increasing its green portfolio from 9.6% in 2015 to 26.5% in 2019.
- Implementing best corporate practice programs to reduce polluting processes. For example: Since 2014 the Institutional Annual Report is only available in digital format, which avoids the use of 500 kilos of paper and 162 thousand liters of water for each edition.
- Measuring the Carbon Footprint in its offices in Lima (2015) and at national level (2016).

It has also accomplished the following strategic actions:

- A 50 million Euro credit line from the AFD (Agence Française de Développement).
- A 5 million Euro grant from the European Union to develop the Green Bank Project.
- An agreement with the GIZ (Gesellschaft für Internationale Zusammenarbeit) to provide the services of an integrated forestry expert, to develop green products.
- An economic, social and environmental impact assessment workshop with Finance Alliance for Sustainable Trade (FAST).
- Implementation of the Green Bank Department.
- Participation at the COP20 (Lima) and COP21 (Paris).
- Signatory of the Green Financial Protocol in 2014.
- Organization of the International Seminar on Rural Microfinance "Promoting Forest Development in Peru".
- Financing reforestation, agroforestry and sustainable forestry management.

WHY MARINE POLLUTION OFFERS A SOLUTION TO CLIMATE CHANGE

baleen
engineered by nature

www.baleen.com

University of South Australia start-up, Baleen Filters, are peer recognised experts in liquid/solid recovery and water re-use across industry, with some 200 installations operating across Oceania since 1999. The company pioneers best practice in wastewater infrastructure and seeks collaboration for technology transfer internationally.

To counteract climate change we need to understand that the Earth, the biosphere which sustains us, is an ecosystem of which we form part. And, to avoid environmental catastrophe we must alleviate pollution and revitalise the ecological processes that sustain life.

Water is foremost to any ecosystem. Water cycles through the atmosphere, soil, rivers, lakes and oceans distributing nutrients to support life. This cycle involves exchange of energy, which leads to temperature changes, contributing energy flow. These heat exchanges influence climate. Consequently, water has a profound influence on climate.

The ocean is Earth's largest supporting ecosystem, home to the most abundant life on Earth, but has long suffered as a consequence of industry and growing coastal populations. The ocean is also the largest carbon sink, absorbing 90% of global warming and 30% of all carbon emissions (WMO GAW 2014) but its own ecosystems are collapsing as a consequence of pollution.

Humanity has dominion over Earth's ecosystems and can preserve essential dynamics in two practical ways. The first is through mitigation of pollution and the second is through reconciliation of natural water cycles.

Waste water disposal poses a direct influence on the water cycle. It is a 'waste' stream typically 99.9 to 99.99% in water content and if managed more wisely would end marine pollution and benefit natural water cycles indefinitely. Reclamation of 'WasteWater' for irrigation revitalises a plethora of ecosystems, thereby preserving the second most

"Visualise a future in which the Earth's natural cycles and urban economies co-exist. Marine outfalls transformed into Sewer Mining facilities with micro-plastics and non-biodegradables recovered (as recyclables) separate from energy-rich 'waste' (for carbon- negative fuel) and nutrient-laden 'water' reclaimed for irrigation."
Yuri Obst, Founder and CEO of Baleen

Visit www.baleen.com and contact yuri@baleen.com for partnership opportunities.

influential means to cooling the planet, the Earth's flora, returning natural water cycles in symbiotic relationship with the ocean.

Displacing carbon emissions

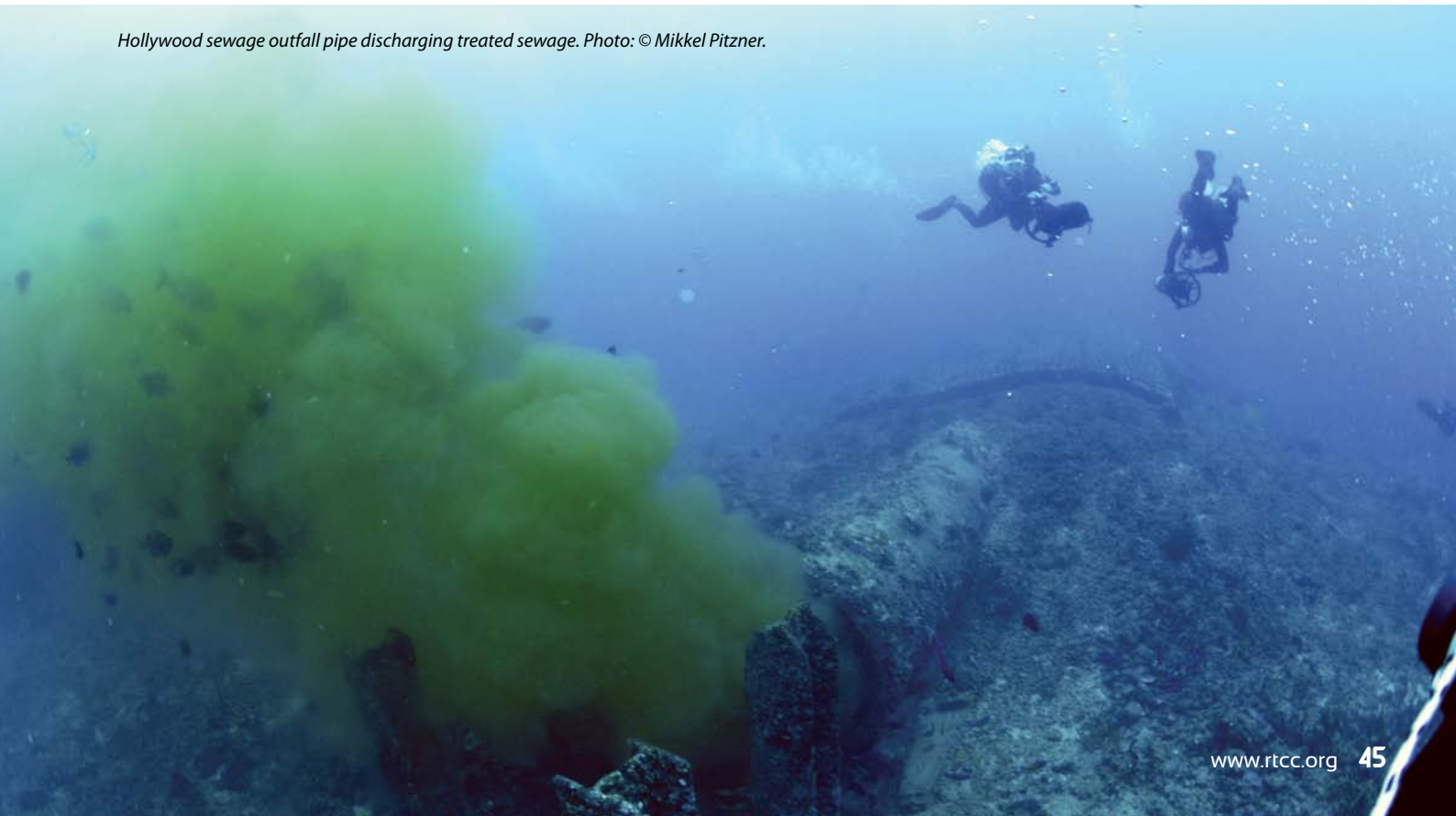
Emission estimates (UNEP 1998 UN WWAP 2003) determine there is enough energy-rich 'Waste' contained by 'WasteWater' to yield a greenhouse benefit of some 3.34 billion tonnes of CO2 avoided annually (vs. estimated global emission of 9.50 billion tonnes, US EPA 2011) to reduce CO2 loading on oceanic ecosystems by one-third. Resulting cleaner 'Water' containing free fertilizer in the form of nitrates and phosphates would supply one-third of global water for agriculture (UN, UNESCO and FAO).

Electricity potential (UNEP 1998 UN WWAP 2003) estimate this 'Waste' resource to yield around 583 billion kilowatts of useful power (vs. a global demand of 23,322 billion kilowatts, IEA 2013), though just 2.5% of global demand is higher than the combined total of 2% from wind, solar, geothermal and biomass (REN21 2014).

Unlike non-renewables, 'WasteWater' is found where communities reside, which means it could power the transport industry in lieu of existing coal-fired or oil-combustion sources, to further encourage the move from fossil fuels.

With combined will and dedicated resourcing, humanity can restore natural order to Earth's ecosystems and end destructive Climate Change. So, what are we waiting for?

Water Infrastructure, sample before vs. after water quality following two-stage inline Baleen micro-screening.



Hollywood sewage outfall pipe discharging treated sewage. Photo: © Mikkel Pitzner.

DEATH BY A THOUSAND CUTS:

CHARCOAL AND DEFORESTATION

The island of Hispaniola—made up of Haiti and the Dominican Republic (DR)—is widely recognized as one of the most important "hotspots" for biological diversity on the planet. However, it is currently suffering large-scale habitat loss and deforestation, in large measure because of charcoal production and unsustainable agriculture. This habitat loss not only contributes to climate change, but makes both nations more susceptible to the effects of climate.

By Jake Kheel and
Juan Mejia Botero

Death by a Thousand Cuts, our feature-length film documents the illegal charcoal trafficking from the forests of the Dominican Republic to the urban markets of Haiti, and how the conflict over the island's remaining natural resources could potentially end in violence. Over five years, we witnessed the forests of the Sierra de Bahoruco—the Dominican national park on the border of Haiti—slowly disappear. In our journey following the charcoal trail, we explored the complex factors that drive what has become a very lucrative, but destructive industry.

In Haiti—where dangerously low levels of forest cover have degraded natural resources—charcoal made from trees is the primary source for cooking fuel. With no viable fuel alternative and limited trees with which to meet its charcoal demand, Haiti has become increasingly dependent on charcoal produced in the Dominican Republic—which has significantly more forest cover. Charcoal producers find remote parcels of forest in the DR, clear vast quantities of trees to make charcoal ovens, and then smuggle the product back to Haiti in sacks for sale.

The simple narrative is that desperately poor Haitians have turned to the Dominican forests for their livelihood. However, during our investigation we quickly found this picture, while not fully inaccurate, was definitely incomplete. It is not simply desperately poor Haitians cutting down Dominican trees to make out a livelihood. Many of the largest charcoal smuggling operations on Hispaniola were actually facilitated by, paid for, and directly benefitted Dominicans that controlled its production.

In the lowlands surrounding Lake Enriquillo and north of the Sierra de Bahoruco, both Dominican and Haitian charcoal producers worked for wealthier Dominican merchants. The merchants not only controlled charcoal production along the border area, but at times managed to acquired permits from the Dominican government, further complicating the situation. The different degrees of corruption in the increasing deforestation occurring along the border became more and more clear to us.

The risks of continued deforestation for both countries of Hispaniola are significant. Haiti is ranked as one of the most vulnerable countries in the world to climate change, and it's susceptibility to flooding, droughts, hurricanes, earthquakes, and landslides threaten to extend to its closest neighbor, the Dominican Republic.

While it is still not too late to save important habitats across the island, it will require a long-term, comprehensive approach be put in place. As long as the demand for charcoal is so vast and the poverty of rural populations on both sides of the island so pervasive, stricter enforcement of forestry laws and "ecological" charcoal substitutes alone are not enough to address the escalating deforestation. A comprehensive solution requires a collaborative Dominican-Haitian approach that recognizes that deforestation will have dire consequences for the entire island.

Trailer: *http://deathbyathousandcutsfilm.com/#trailer*
Webpage: *deathbyathousandcutsfilm.com*
Facebook: *Death by a Thousand Cuts Film*
Instagram: *dbatcfilm*
Twitter: *dbatcfilm*

Climate & Development Knowledge Network

Farmers in Lesotho are using the last reserves of energy in their starved cattle to plough fields, in the hope that the long-delayed rains do come. They haven't and a third year of drought beckons. That puts 700,000 people in danger of starvation by early 2017. Lesotho gets around R700 million a year (US$51m) from selling that water; 10% of government revenue. The government says the money has meant new schools, roads and electricity in previously cut-off communities. Turbines in the system generate 75-megawatts of capacity, almost enough to power the whole country. But people in Katse say they have seen little benefit from selling their water. Rain last fell in any volume in 2013. The worst drought in living memory has ensued, wiping out two season's worth of crops.

Climate Home's reports from the front line of climate change are funded by CDKN

All photos: © Delwyn Verasamy

EnergyNest has developed a unique thermal energy storage technology with superior advantages over the current solutions. We are solving problems in three grid-scale energy storage markets: concentrated solar power, wind power, industrial waste to heat.

www.energy-nest.com

EnergyNest

Average rainfall in the semi-arid regions of South Africa is, at best, half the world average of nearly 1,000mm a year.

Namibia, Botswana, Zimbabwe and the rest of the region has declared a drought disaster. The World Food Organisation estimates that 10 million people will need emergency food aid in the region. This is if it rains and maize crops grow in time for the early 2017 harvest.

Climate change projections – collated in the latest United Nations Intergovernmental Panel on Climate Change report – paint a picture where more of the same can be expected. The region will get up to six degrees hotter by the end of this century. That will dramatically alter rainfall, with less falling, but in more violent storms.

The report warned: "Africa as a whole is one of the most vulnerable continents due to its high exposure and low adaptive capacity." Critically, maize yields in the region are projected to drop by a third by 2050.

CDKN

Climate & Development Knowledge Network

All photos: © Delwyn Verasamy

Prince Sultan Bin Abdulaziz International Prize for Water

Recognizing Innovation

Invitation for Nominations

8th Award (2018)

Established in 2002 by his HRH Saudi Crown Prince Sultan bin Abdulaziz, PSIPW is a leading scientific award for innovation in water research. PSIPW offer a suite of five distinctive prizes every two years for work that addresses the problem of water scarcity in creative and effective ways.

First, there is the **Creativity Prize**, worth US$ 266,000, which is awarded for pioneering interdisciplinary work that can rightly be considered a breakthrough in any water-related field. Universities, university departments, research institutes, companies, and agencies can nominate individuals and teams of researchers for this prize.

Then there are four **Specialized Prizes**, each worth US$ 133,000, covering all aspects of water research. Researchers may nominate themselves for these prizes.

Nominations open online until 31 December 2017

www.psipw.org e-mail: info@psipw.org

A GREEN FUTURE FOR FREIGHT

By Eric Beckwitt
CEO, Freightera

www.freightera.com

Quick implementation of existing technologies can reduce GHG emissions 50-80%, with near zero emission freight transport possible longer term.

Global freight transport currently produces 10% of greenhouse gas (GHG) emissions, up to 50% of the toxic diesel particulate matter (PM) emissions and 45% of nitrous oxides (NOx). Heavy trucks emit 57% of all logistics related GHG. Without change, emissions from freight transport are predicted to increase 290% by 2050.

Quick wins

Maritime Transport: reducing NOx/SOx 90% and CO2 75%

Emissions from cargo ships are 3% of total GHG today, and increasing. Without change shipping may produce 6% of the world's GHG emission by 2020 and 15% by 2050. Shipping is also the most rapidly growing source of NOx and SOx globally, with ship emissions predicted to be about 10% more than all land based emissions by 2020 and 40% more by 2030.

Immediate global implementation of scrubber technology, as mandated now for select zones in European and US waters, can immediately reduce NOx and SOx emissions from maritime transport by over 90%. Additionally, operational measures and existing technologies, if broadly applied, could reduce ship energy consumption and CO2 emissions by up to 75%.

Link2Rail: Immediate 60% emission reduction for long haul freight

Rail is the most efficient option for long haul freight, reducing CO2

Black Magic, a 4,000-ton Solar Hybrid Vessel, reduces GHG emissions by 75 to 100% using Sun, Wind & Waves. Photo courtesy Sauter Carbon Offset Design.

emissions by over 60% vs road. These gains are realized even when rail is diesel powered, and can be further increased by upgrading locomotives to low emission engines. Intermodal freight shipping, truck pick up, rail for long haul, and truck delivery, offers the lowest emission, and frequently lowest cost overland option.

Go Green: Allow shippers to select lowest emission options

Freightera, cooperating with the Canadian government and existing emission reduction programs, will shortly allow freight shippers to compare carriers by total GHG emissions, and automatically display and select the lowest emission option. Carriers that use rail for long-haul, low emission vehicles for last mile delivery, and the full suite of emissions reduction technology available today for diesel engines, can have emissions 40-66% lower than others. Frequently the lowest emission option is also the least cost.

Last mile trucking: Low and zero emission already available

The Freightliner Business Class M2 Hybrid, Workhorse Zero Emission and Siemens Hybrid Drive and multiple CNG/LNG powered truck engines are available now for municipal pickup and delivery of freight.

Long-term solutions

Hybrid electric/wind: green future of ocean transport

Multiple companies, including EcoMarine Power and Dykstra Naval Architects are developing hybrid electric cargo ships that use rigid, rotating sails and solar panels. Vindskip uses the hull as a sail. These hybrid vessels use electric power in port, and electric, wind and LNG/CNG engines at sea, reducing CO2 emissions up to 60%, and cutting SOx and NOx emissions over 90%.

Zero emission locomotives: sustainable electric and hydrogen hybrid rail

Wind, solar and hydro powered electric rail provide the best solution for zero emission long haul transport. Canadian and US rail, currently almost exclusively diesel powered, can be converted to sustainable electric and hydrogen hybrid locomotives. Shifting long-haul freight from road to rail will eliminate emissions from both empty trucks and diesel engines. Combined with last mile pickup and delivery by sustainable electric trucks, electric rail can provide zero emission transport.

Zero emission road transport

Wind, solar and hydro powered electric vehicles, and hydrogen fuel cell powered hybrids, offer the best long-term solution for those regions and communities that will never be accessible by rail or water. By 2030 all freight should be hauled by such zero emission vehicles, 100% renewable powered.

Freightera is an award winning online marketplace on a mission to automate freight shipping, increase efficiency and operating margins for shippers and carriers. Freightera is creating partnerships and systems and promoting new technologies that allow business to find the lowest emission transportation options.

For more information, see www.freightera.com.

TURNING WATER SECURITY RISK INTO AN OPPORTUNITY FOR ALL

By Dr Luca Alinovi
Executive Director
Global Resilience Partnership (GRP)

www.globalresiliencepartnership.org

Almost three quarters of the world is covered in water, yet for many individuals and businesses across the globe, water security – access to a clean and consistent supply of potable water – remains a daily concern.

As many of you visiting COP 22 will know, water security is a highly complex issue driven by three core factors: water scarcity, governance and transboundary access. Outside of these sit a further range of variables which impact water security, spanning biophysical, infrastructural, political, social, institutional and financial issues. The result is that something many of us take for granted becomes a highly volatile and heavily politicised commodity.

The impact cannot be underestimated. Water is not only central to sustaining livelihoods and human well-being but also key to socio-economic development. Without practicing water security uncertainty thrives, with vulnerable communities unable to plan for the future and make the most of their potential.

Making a difference

However, there is no reason why we can't harness innovative thinking and business backing to make quick strides forward. This year the Global Resilience Partnership (GRP) launched the Water Window Challenge, backed by a US$10 million commitment from the Z Zurich Foundation to tackle another water based issue – flooding. The initiative sourced intelligent applications for funding from organisations of all sizes from across the globe who believed they had a resilience-based solution to flooding issues.

More than 200 entrants are being whittled down to 10 winners, all of whom will be awarded either US$ 250,000 in seed funding, or US$ 1 million in scale-up grant funding to implement their bold, innovative plans to build resilience. Instead of prioritising emergency response and funding a disaster-respond-repeat cycle, the GRP is investing in these projects to help communities flourish in the face of extreme unpredictability. We hope the impact will be both inspirational and rapid. Our ambition will be to, after 18 months of testing, scale up further the most successful solutions and implement our learnings as widely as possible.

The Global Resilience Partnership (GRP), convened with US$150 million by The Rockefeller Foundation, USAID and Sida plans to help millions of vulnerable people in the Sahel, the Horn of Africa and South East Asia better adapt to shocks and chronic stresses and thrive in a more resilient future.

Turning risk into reward

Progress made by our Challenge winners will just be the beginning. As we watch an array of innovative flooding solutions begin to save lives and change livelihoods, we must now turn our attention to providing the same level of solution for water security, overcoming the environmental and political issues we face.

As has been recognised by the UN-Water, investment in water security is a long-term pay-off which also demonstrates immediate, visible gains. Where risk exists, there is always opportunity for a business willing to put social change + profit at the heart of their business model. The GRP believes that, through partnering with a forward-thinking business we can vastly improve the lives of those who are currently unable to rely on a stable, substantial, clean water supply.

Through partnering with the GRP, businesses can maximise opportunities for their expansion in developing countries by helping communities adapt to risk and manage unpredictability. We are launching a second pillar of the Water Window Challenge, focusing specifically on the prominent challenge of water security in the Horn of Africa, the Sahel, South and South East Asia.

We are searching for a new partner willing to match our ambition to change the lives of millions in parts of the world where water security remains a substantial barrier to growth. Working together to identify viable solutions and scale them rapidly, we can transform risk into opportunity and open up new marketplaces.

For many communities, water security issues are a barrier to growth and prosperity. As we congregate in Marrakech to discuss the world's most pressing environmental challenges, it's clear that governments, communities and business leaders must work together to eradicate that barrier. We must confront the issue as an opportunity, with benefits for the companies who take a seat at the table and the individuals desperate for access to clean water.

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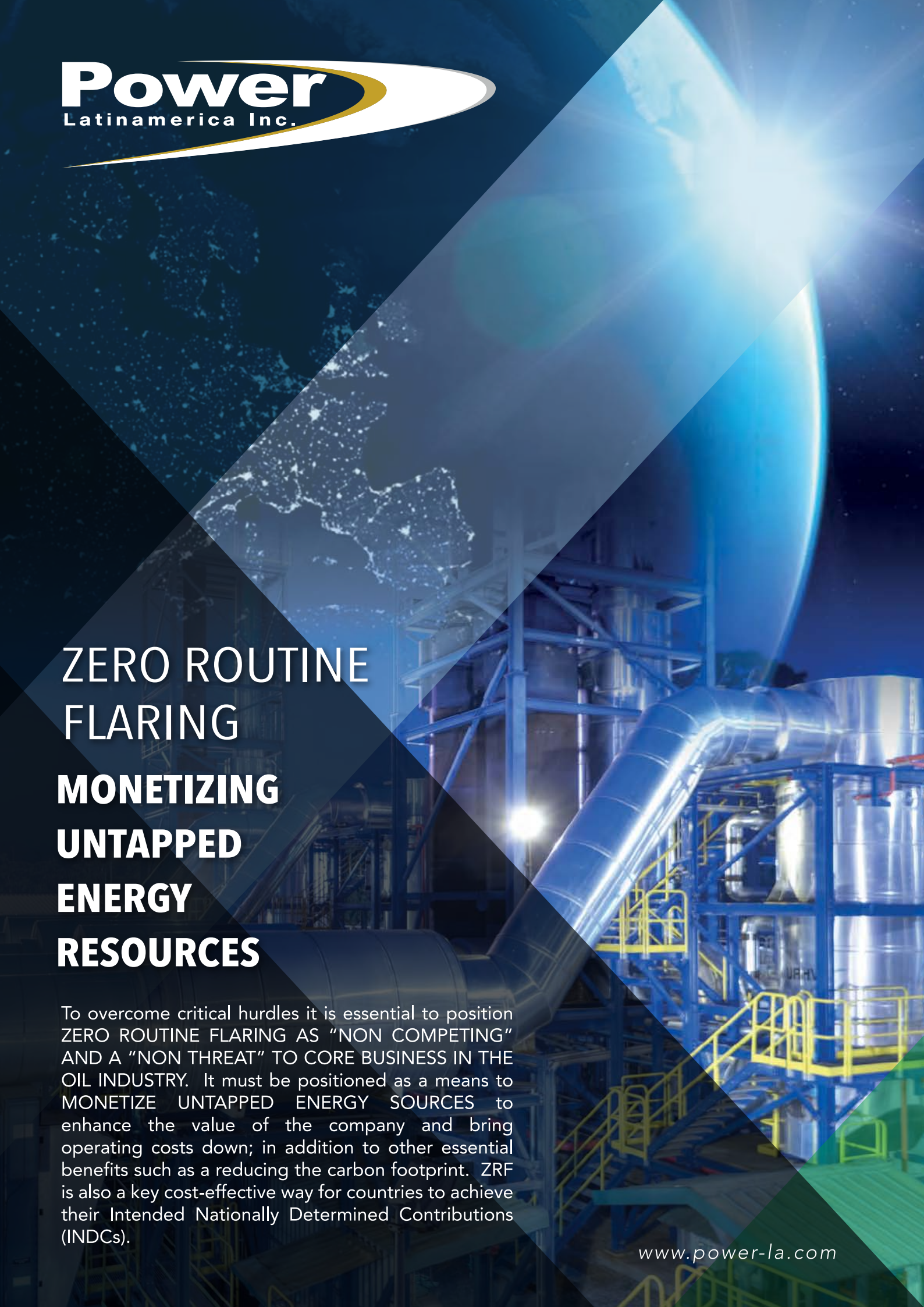

ZERO ROUTINE FLARING

MONETIZING UNTAPPED ENERGY RESOURCES

To overcome critical hurdles it is essential to position ZERO ROUTINE FLARING AS "NON COMPETING" AND A "NON THREAT" TO CORE BUSINESS IN THE OIL INDUSTRY. It must be positioned as a means to MONETIZE UNTAPPED ENERGY SOURCES to enhance the value of the company and bring operating costs down; in addition to other essential benefits such as a reducing the carbon footprint. ZRF is also a key cost-effective way for countries to achieve their Intended Nationally Determined Contributions (INDCs).

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The Global Resilience Partnership (GRP), convened with US$ 150million by The Rockefeller Foundation, USAID and Sida plans to help millions of vulnerable people in the Sahel, Horn of Africa and South and South East Asia better prepare for shocks, persist through chronic stresses and thrive in a more resilient future.

GLOBAL RESILIENCE PARTNERSHIP | WATER WINDOW