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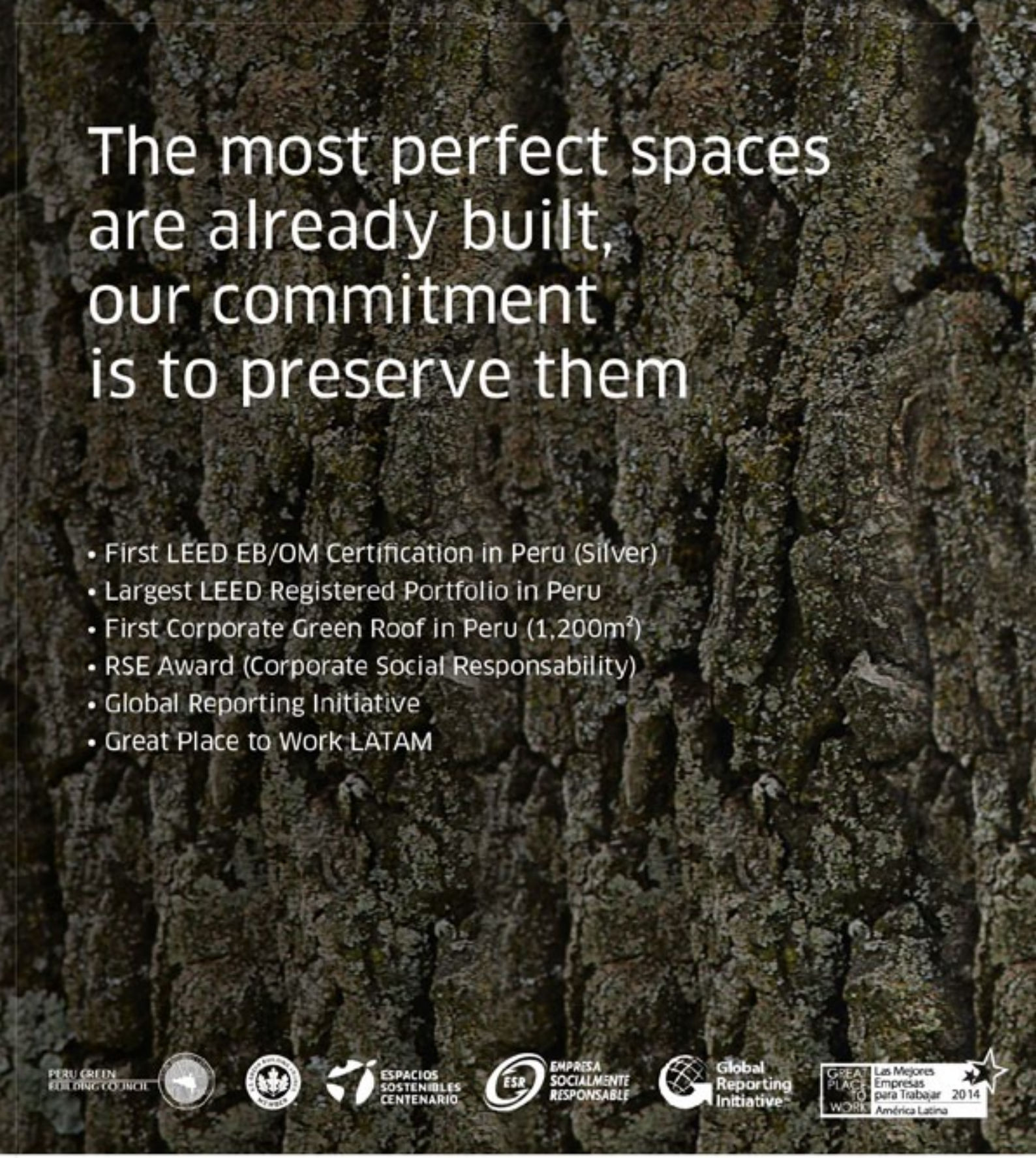

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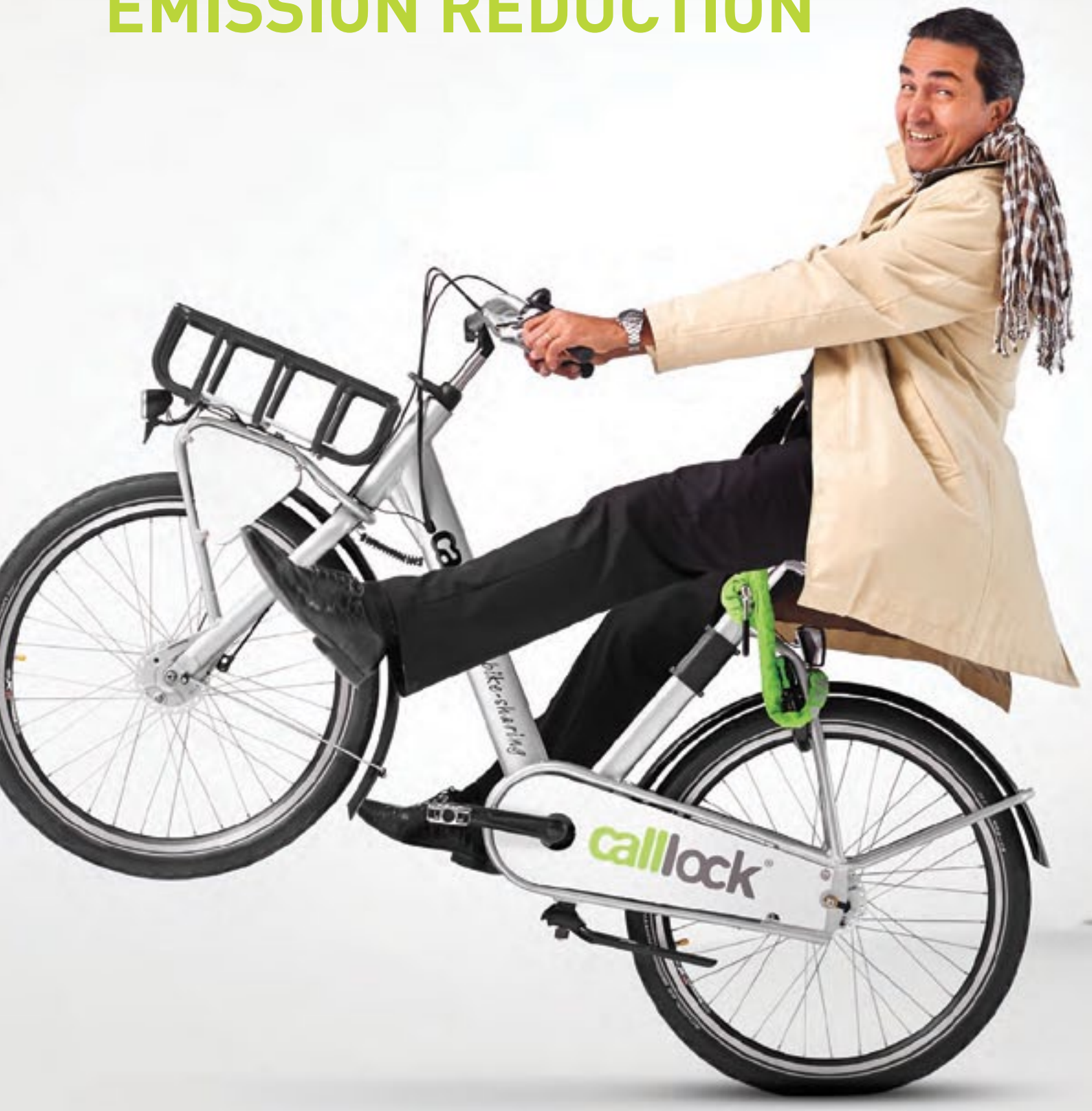

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INSIDE

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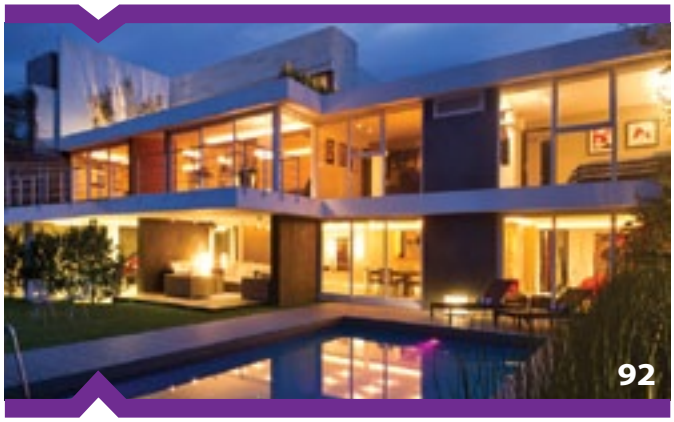

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CELEPSA: HARNESSING PERU'S WATER POWER

Peru's ongoing economic and social development will require investment in sources of electricity generation that also help to mitigate the effects of climate change.

This applies to hydroelectricity projects, many of which make use of water linked to protected areas. The sustainability of these projects will depend on their compatibility with improvements to the quality of local people's lives and the country's conservation policies.

As part of its growth strategy, Celepsa is also hoping to develop hydroelectric projects in the interior, in an area of protected natural beauty, which will generate positive environmental externalities and which will include the largest possible number of social actors.

Peru, has grown 6.64% on average over the last 10 years, and has been less affected by economic crises than the rest of the world. There is a direct relationship between this growth and increasing national demand for energy, which is around 7%.

At present the country's electrical generating capacity in terms of effective power is 7813 MW, 41% of which is hydro, 58% thermal and 1% from other sources. By 2021, electricity generation needs to be more than double this in order to effectively support the country's growth.

Peru's hydroelectric potential is technically 70,000 MW, of which 11% is currently being used, and of this a little more than 60% (León 2007) exploits water linked to Protected Natural Areas (ANP).

Celepsa operates El Platanal, the third largest hydroelectric station in Peru located 250 kilometres south of the city of Lima. With 220 MW of installed power, it makes efficient use of the Cañete River, which is one of the largest and most stable river basins on the Peruvian coast, and a seasonal regulating reservoir in the upper reaches of the river basin.

The upper basin is part of the system of natural areas protected by the government, known as the Nor Yauyos Cochas Landscape Reserve (RPNYC) covering more than 429.72 km^2 of Andean lakes, the sacred mountain Pariacacca, Andean wetlands, cultivated terraces dating from pre-Inca and Inca times and 14 campesino communities, on an extension of 2,212.68 km^2.

It is possible to generate 150 MW in the RPNYC from hydroelectric stations with a low environmental impact. The question is how to do so in a sustainable manner, in other words how to create a model that preserves the Landscape Reserve, generates hydroelectricity, improves the lives of local people and mitigates the effects of global climate change.

At Celepsa we are convinced that strict compliance with environmental protection legislation, social philanthropy and a good reputation are no longer enough to guarantee the sustainability of electricity generation in Peru. The social context of our operations demands permanent commitment to the search for inclusive strategies that can protect the exit of hydroelectric operations and improve the quality of life for nearby residents.

Celepsa's sustainable proposal contemplates, in addition to the legally required environmental and social activities, that increased positive externalities can be generated if greater emphasis is placed on developing funds for conservation projects and improving the quality of life of people living in the zone, through the Patronato of the Nor Yauyos Cochas Landscape Reserve (P-RPNYC). In 2009 CELEPSA coordinated with the National Protected Natural Service (SERNAN) and encouraged the formation of the P-RPNY; it is the first one with the explicit purpose of helping to conservation of a particular ANP.

Celepsa is a company facing great challenges, which has built one of the largest power stations in Peru and established a new standard for environmental and social management in the electricity sector; El Platanal is recognised by the government and by the Peruvian electricity sector for its contributions to local development and conservation of the environment.

Its future aims are not only to increase value for its shareholders, increase electricity generation and to comply with applicable legislation; but also to generate new sustainable models that stimulate the growth of its business, to conserve the environment in a sustainable manner and improve the quality of life of nearby communities.

Our experience in the Cañete River basin (from its headwaters to the valley) is a model that can be replicated and generate many opportunities for other companies and for the State.

Celepsa
www.celepsa.com

1 World Bank (2014). Datos.bancomundial.org
2 Eva Arias Sologuren, President of SNMPE. 'Gestión' magazine, March 2014, p. 43.
3 César Butrón, President of COES. Semana del Agua – National Water Authority. March 2014.
4 Sacred in the Andean cosmovision. Mount Pariacacca is the Apu (God) at whose feet the Inca road Qapac Ñac runs.

In accordance with our institution's Code of Conduct, the member companies of the National Society of Mining, Oil and Energy are implementing efficient technologies and environmental management programmes that help mitigate the effects of climate change.

Our associate companies are also working on projects that help preserve the environment in their surrounding areas, such as efficient water management programmes, reforestation initiatives, solid waste management and sustainable transport programmes.

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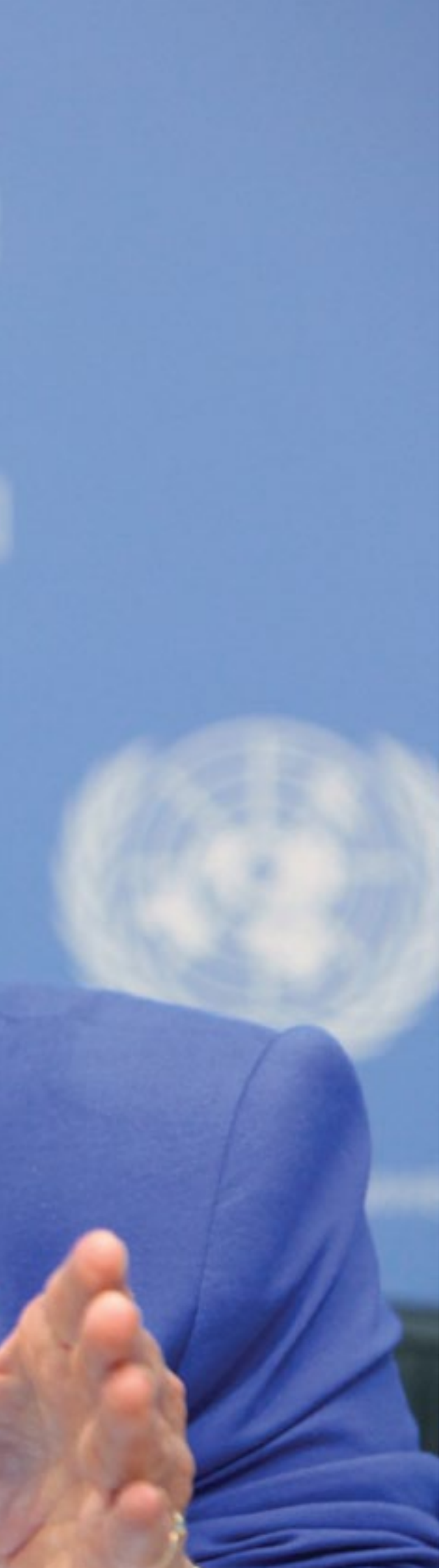

United Nations
Framework Convention on Climate Change

THE CONTEXT IN WHICH A GLOBAL climate change agreement is being negotiated has substantially changed and irrevocably changed. This is an unprecedented mobilisation of public support, not just for an agreement but for an ambitious agreement. An agreement that is actually going to make a difference in the lives of so many people and particularly the vulnerable people. That's why this is so exciting. There has never been so much public support. There has never been so much mobilisation of the private sector and finance sector to show that not only must we address climate change but that we can address climate change. And so the third piece there is yes we must, yes we can and then we will.

UN climate chief Christiana Figueres, speaking to RTCC ahead of the New York march for climate justice, September 21, 2014

THE SCIENCE IS CLEAR
IT'S TIME TO ACT

IPCC's fifth assessment report and the scientific rationale for action.

By Dr. R.K. Pachauri, Director-General, The Energy & Resources Institute (TERI), Chairman, Intergovernmental Panel on Climate Change (IPCC)

Never has knowledge on all aspects of climate change provided a more compelling rationale for action than now, with the findings of the IPCC's Fifth Assessment Report (AR5). On the basis of observations the AR5 has found that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and oceans have warmed, the amounts of snow and ice have diminished, and sea level has risen. Yet, despite a growing number of climate change mitigation policies, annual total anthropogenic GHG emissions have continued to increase over 1970 to 2010, and were the highest in human history from 2000 to 2010. Human influence on the climate system is clear, and continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.

The AR5 has used four different scenarios for projections of the future, with the scenario labeled as RCP 2.6 embodying the most stringent mitigation pathway. Warming will continue beyond 2100 under all RCP scenarios except RCP2.6. Increasing magnitudes of warming increase the likelihood of severe, pervasive and irreversible impacts. In recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans. People who are socially, economically, culturally, politically, institutionally, or otherwise marginalized are especially vulnerable to climate change. Climate-related hazards affect poor

Jaluit Atoll Lagoon, Marshall Islands. Photo: © Keith Polya.

Photo: © IISD www.iisd.ca

people's lives through impacts on livelihoods, reductions in crop yields, destruction of homes and increased food prices and food insecurity. The overall risks of climate change impacts can be reduced by limiting the rate and magnitude of climate change, involving both adaptation as well as mitigation measures.

Climate change over the 21st century is projected to intensify competition for water among sectors. Throughout the 21st century, climate-change impacts are projected to slow down economic growth, make poverty reduction more difficult, further erode food security and prolong existing and create new poverty traps, the latter particularly in urban areas and emerging hotspots of hunger.

Prospects for climate-resilient pathways for sustainable development are related fundamentally to what the world accomplishes with climate-change mitigation. Since mitigation reduces the rate as well as the magnitude of warming, it also increases the time available for adaptation to a particular level of climate change, potentially by several decades.

Limiting the effects of climate change is necessary to achieve sustainable development and equity, including poverty eradication. Climate policy intersects with other societal goals creating the possibility of co-benefits or adverse side effects such as those related to human health, food security, biodiversity, local environmental quality, energy access, livelihoods, and equitable sustainable development.

Mitigation scenarios in which it is likely that the temperature change caused by anthropogenic GHG emissions can be kept to less than 2 °C relative to pre-industrial levels by 2100 are characterized by emissions levels near zero GtCO2equivalent or below in 2100, by more rapid improvements of energy efficiency, a tripling to nearly a quadrupling of the share of zero- and low-carbon energy supply from renewables, nuclear energy and fossil energy with carbon dioxide capture and storage (CCS), or bioenergy with CCS (BECCS) by the year 2050. However, if this set of outcomes is to be attained then policies will need to be put in place now and initiatives taken in hand early to meet the challenge at least cost. Delaying additional mitigation further increases mitigation costs in the medium- to long-term and narrows the range of options consistent with maintaining temperature change below 2 °C relative to pre-industrial levels. We now have knowledge on the basis of which adaptation as well as mitigation measures at an adequate level can be mounted across the globe.

THE ROAD TO PARIS: FASTEN YOUR SEATBELTS

Former UN climate chief says much has changed since world leaders last tried to agree on a way to tackle climate change.

By Yvo de Boer

History has a mixed record as a predictor of the future, but it can provide useful a benchmark. We're five years on from the climate summit in Copenhagen, which was supposed to deliver a global agreement on action to combat the ever-increasing threat of climate change. As we approach the COP 21 meeting in Paris at the close of 2015 - the new deadline for a global agreement, it is worth reviewing what's changed since then.

Firstly, the world has experienced the impacts of climate change over the past five years to an extent that has changed the politics of the discussion. From extreme weather impacts on people, water, food supplies and infrastructure to the changes in ecosystems to low lying islands disappearing below the waves, the scale of the threat is no longer a matter of projection.

Secondly, the balance of power in the world has continued to shift. The economic crisis and the still stuttering recovery have revealed the weaknesses in many of the world's largest economies and the reality of global interdependence has become ever clearer. The divide between the old, rich world and the new emerging economies is increasingly blurred.

The fossil-fuels that drove the industrialization of the west and have since powered the emerging economies are also taking their toll. As prices rise, pollution increases and new supplies become harder and harder to access, energy is at the center of global politics to a much greater extent than in 2009.

But while these global changes set an important context for the Paris meeting, Copenhagen also re-taught the lesson that all politics is local. National leaders will operate in the space granted to them by their national political context, not under the pressure of international opinion. Nevertheless, Paris is important: it creates a momentum that will have leaders survey that national political space again, test the resolve of their allies and enemies, and take a new reading of how the problems, the solutions and the various interests at play stack-up. This process is already on view with the notable increase in climate related debate across the world in the past 6 months.

World leaders will re-engage in this issue in the run up to Paris - most visibly at the UN Climate Summit hosted by the United Nations Secretary General Ban Ki-moon in September. As they do so, they will have the latest findings from the IPCC: the problem is certain, man-made, urgent and catastrophic if they don't act, but also soluble by a fast and comprehensive response. The economists are still struggling with issues of cost and GDP effects of both the impacts and the solutions and yet the low-carbon economy is thriving, fossil-fuels cost more and carry an increasing political price. In the US, President Obama is facing the implacable opposition of many in Congress, but brings with him a wave of popular support for his actions on power plant emissions.

In China, President Xi is facing an unprecedented public outcry over air pollution, looming water shortages and the huge challenge of a rapidly urbanizing population, and is struggling with how to continue China's industrial growth while capping coal and continuing the charge into renewable energy.

In India, Prime Minister Modi faced some international unease over his environmental concerns, but has brought Pakistan's leader to his inauguration and announced the largest energy poverty eradication project in history, using solar power.

The Europeans, past leaders on climate policy, now find themselves fractured as a Union, threatened by fossil fuel dependence, burning more coal and increasingly unable to speak as one, and yet Germany is breaking new ground in managing major renewable energy resources on its power system, energy efficiency is back at the top of the agenda and the completion of an integrated European power system to balance renewable resources is one of the few projects on which they agree.

In Paris, unlike Copenhagen, national self-interest in the world's leading economies is aligning around a low-carbon, low pollution future. While there is still some entrenched opposition in each country to accelerating this shift, the view that business as usual is the most expensive and destructive option is widely held, and the desire to take steps together is the greatest change since 2009.

The dance has already begun. In Bonn in June many national positions were visibly shifting, with a sense of actual negotiations, rather than just set piece trading of positions, for the first time in many years.

Many of the key players will meet again at the G20 in Australia where fossil-fuel subsidies, still a significant portion of government spending worldwide, will be on the agenda.

Those opening positions will then be tested and at COP 20 in Lima, which will be essentially a litmus test, having a clear negotiating text on the table and giving everyone a much clearer understanding of what the definition of success or failure is. For the first time, the Peruvian government have asked that defence ministers join their climate and energy counterparts at the meeting. This reflects the increasing impact of climate change on international affairs and foreign policy.

In the first quarter of 2015, countries will announce their proposed efforts on actual emissions reductions and actions that would be included in an international agreement. Country contributions will make it clear whether they intend to continue to power their economies with coal and other fossil fuels and how quickly they will shift into a clean and efficient economy, how quickly they plan to stop deforestation and the timeframe in which they will stop building coal-fired power plants and other high-carbon infrastructure. This will be a vital moment, when for the first time it will be possible to see the real intent of countries, and to calculate if the world's response actually adds up to the international commitment to limit man-made global warming to two degrees Celsius. With a brief stop in Bonn and the G7 in Germany, we are then in Paris in a few short months.

At the end of the day, after intensive negotiations throughout 2015, success will be measured by whether money is on the table and the major emitters are committing to action that goes beyond the incremental.

But while Paris is a vitally important waymark, it is not the end of the road. What is agreed at COP 21 will not be implemented until 2020, leaving another 5 years to iron out much of the detail. If the principles of a flexible, ambitious and equitable approach can be agreed in Paris, the next steps will prove equally important and the following five years will herald just as much change as we have seen since 2009, change that will affect national politics and political will and flow through to international cooperation.

Yvo de Boer is the Director-General of the Global Green Growth Institute (GGGI), a Seoul-based international organization. Previously he was Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC) from 2006 to 2010.

www.gggi.org

UKYCC'S GUIDE TO THE JARGON-FILLED WORLD OF THE UNFCCC

ADP **The Ad Hoc Working Group on the Durban Platform for Advanced Action.** ADP discussions are split between two main areas, Workstream 1 (WS1) and Workstream 2 (WS2). WS1 will be of particular concern to parties at COP 20 as it deals with the much anticipated 2015 deal that will create a "protocol, legal instrument or agreed outcome with legal force" to come into effect in 2020. WS2 deals with climate action in the vital years before 2020.

AOSIS **The Alliance of Small Island States.** This negotiating coalition groups together some of the states that are most vulnerable to the impacts of climate change. They often serve as an important force in the climate talks in calling for greater ambition and reminding the often insular negotiations of the reality of the issues being discussed.

Annex I and Non-Annex I Parties One of the most controversial areas of the talks, this refers to the division of parties into two distinct groups: Annex 1 and non-Annex I. Annex I parties are those that were considered to be wealthier industrialised states in 1992. These states have so far been bound to emissions reductions targets under the Kyoto Protocol, whereas all other states have faced less of a legal obligation to act. Certain parties view this distinction as a roadblock to a far-reaching global deal Others view it as vital to ensuring those with historical responsibility for climate change take greatest responsibility for tackling it.

BINGO **Business and Industry Non-Governmental Organisation.** It's not just states that attend the negotiations. BINGOs represent one of the most influential of the non-governmental groups present at each COP. Many environmental NGOs have raised concerns around their level of influence. At COP 19 in Warsaw this was one of the factors leading to a mass walkout of environmental, youth, and indigenous NGOs from the talks.

Bottom-up vs top-down As 2015 and the deadline for a global deal gets closer, debate around the architecture of the deal is heating up between proposals for a 'bottom-up' approach with countries making their own, non-binding, voluntary targets to reduce carbon emissions and a more 'top-down' method where a common goal for reducing emissions will be agreed and then divided between nations.

CBDR-RC **Common But Differentiated Responsibility and Respective Capabilities.** This is a key principle of the convention and is closely related to the division of parties into Annexes. The principle can be interpreted in a number of ways. It is often taken to mean that, although climate change is the common responsibility of all states, we must recognise that certain states bear historic responsibility for climate change and that these states should take the lead on mitigation. CBDR-RC also recognises the capability of states to act on climate change varies due to factors such as wealth and access to technology.

CDM **Clean Development Mechanism.** A crucial part of the Kyoto Protocol, CDM allows Annex 1 countries to gain emissions reductions credits by funding a variety of carbon-reduction projects in developing countries.

COP **Conference of the Parties.** Peru will be the 20th Conference of the Parties to the UNFCCC, the first was in Berlin in 1995. It's worth noting that this means by COP 21 states will have been negotiating for 25 years, many feel that if a relatively ambitious deal isn't reached in Paris the suitability of the UNFCCC as a means of addressing climate change will be in doubt.

Divestment Not strictly part of the talks, the fossil fuel divestment movement is increasingly having an impact on the way public institutions invest their money and the way wider society views fossil fuels. The movement started with students calling on their universities to divest from fossil fuel companies, but it has now spread with campaigns across the world calling for institutions as varied as the Vatican and the UN to divest from fossil fuels.

Equity Discussions around equity have become a key part of the negotiations for a global climate deal. Equity is about each nation feeling they are taking actions that are appropriate to their responsibilities for emissions reductions, and so interpretations of CBDR-RC are key in these discussions. Youth are also calling for intergenerational equity to be recognised in the talks.

GCF **Green Climate Fund.** The GCF was formally established by parties at COP 16 in order to finance a variety of activities in developing countries around combating climate change and its impacts. However, as things currently stand, the GCF is severely under financed and many countries feel that Annex I parties need to contribute significantly more finance to the GCF before its appropriate for developing states to take action. If it is felt that developed countries have not pledged adequate finance by the end of COP 20 then this could jeopardise securing a global deal in Paris.

By Matthew Sellar

GHG **Greenhouse gases.**

IPCC **The Intergovernmental Panel on Climate Change.** The IPCC is the scientific body of the UNFCCC. Since its formation in 1988 the IPCC has consistently given us clear warnings to act on climate change or else face its devastating consequences. Most recently the IPCC gave us its fifth assessment report (AR5). The report makes clear that a rapid reduction of greenhouse gasses will help the world avert the worst of climate change, but without swift and ambitious strategies to reduce our carbon emissions, global temperatures by the end of the century are likely to exceed the 2 degree limit agreed by world leaders.

Kyoto Protocol (KP) **The Kyoto Protocol** remains the only legally-binding agreement to reduce greenhouse gas emissions achieved by the UNFCCC. It covers most of the countries considered to be developed or industrialised in 1992, known as 'Annex I' countries. We are now in the second commitment period (CP2) of the protocol, to which the USA, Canada, Russia, New Zealand and Japan did not sign up.

Loss and Damage **Loss and Damage** refers to the loss and damage caused by the impacts of climate change. Specifically it is the term given to the calls from many states that Annex 1 countries should offer a form of compensation to developing countries for the damage caused to them by climate change. In Warsaw a loss and damage mechanism was set up to take this concept further (see WIM), however despite the level of support this idea has, it seems unclear how it can effectively be implemented given the significant legal and political challenges this would entail.

LULUCF **Land Use, Land Use Change and Forestry.** This refers to the impact of land-use and de-forestation/afforestation on GHG emissions.

MRV **Measurable Reportable and Verifiable.** MRV is another area of contention that will need to be resolved before a "global deal" is reached. The USA and other, mainly Annex 1 parties, want the mitigation targets and actions of all parties to be interdependently measured and verified, however many states, notably China, have so far strongly resisted moves towards a blanket application of MRV.

NAMAs **Nationally Appropriate Mitigation Actions.** NAMAs refers to actions taken to reduce the emissions of a non-annex 1 state. Parties can formally communicate these mitigation actions to the UNFCCC, which so far more than 57 states have done. Many states feel that this approach is outdated and discussions around alternate, potentially more legally binding, ways of encouraging mitigation actions will form the crux of discussions negotiating a 2015 deal.

OPEC **Organisation of the Petroleum Exporting Countries.**

REDD+ **Reducing Emissions from Deforestation and Degradation.** REDD is the mechanism under the UNFCCC that seeks to reduce emissions from deforestation and degradation of forestry.

UNFCCC **The United Nations Framework Convention on Climate Change.** The UNFCCC was signed in 1992, and held its first Conference of the Parties (COP) in 1995. It's worth noting that the convention was established with the aim of stabilising greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system". Occasionally also referred to as the UNFCC or the UNFCCCC by sleep-deprived negotiators.

YOUNGO The constituency of youth NGOs was established in 2009 to give young people a voice in the talks. YOUNGO is the only constituency within the UNFCCC that has permission to perform creative actions. Within the conference centre, youth climate campaigners also interact with policy-makers through policy submissions and speeches (called interventions) in plenary meetings. YOUNGO members organise a Youth and Future Generations day at every COP as a reminder of the moral impetus for governments to take urgent and ambitious climate action, and have put on a 3-day Conference of Youth directly preceding the COP since 2005 to organise and skill-up the international youth climate movement (IYCM).

***UKYCC: The UK Youth Climate Coalition** is run entirely by a team of highly motivated young volunteers, all of which are between the ages of 18-29, working together between other commitments to campaign for a clean and fair future. Every year we train up and send a UK Youth Delegation to the United Nations Climate Change Talks. We collaborate with other international youth organisations to call for immediate and ambitious international climate action that is fair and protects the world's most vulnerable.*

www.ukycc.org


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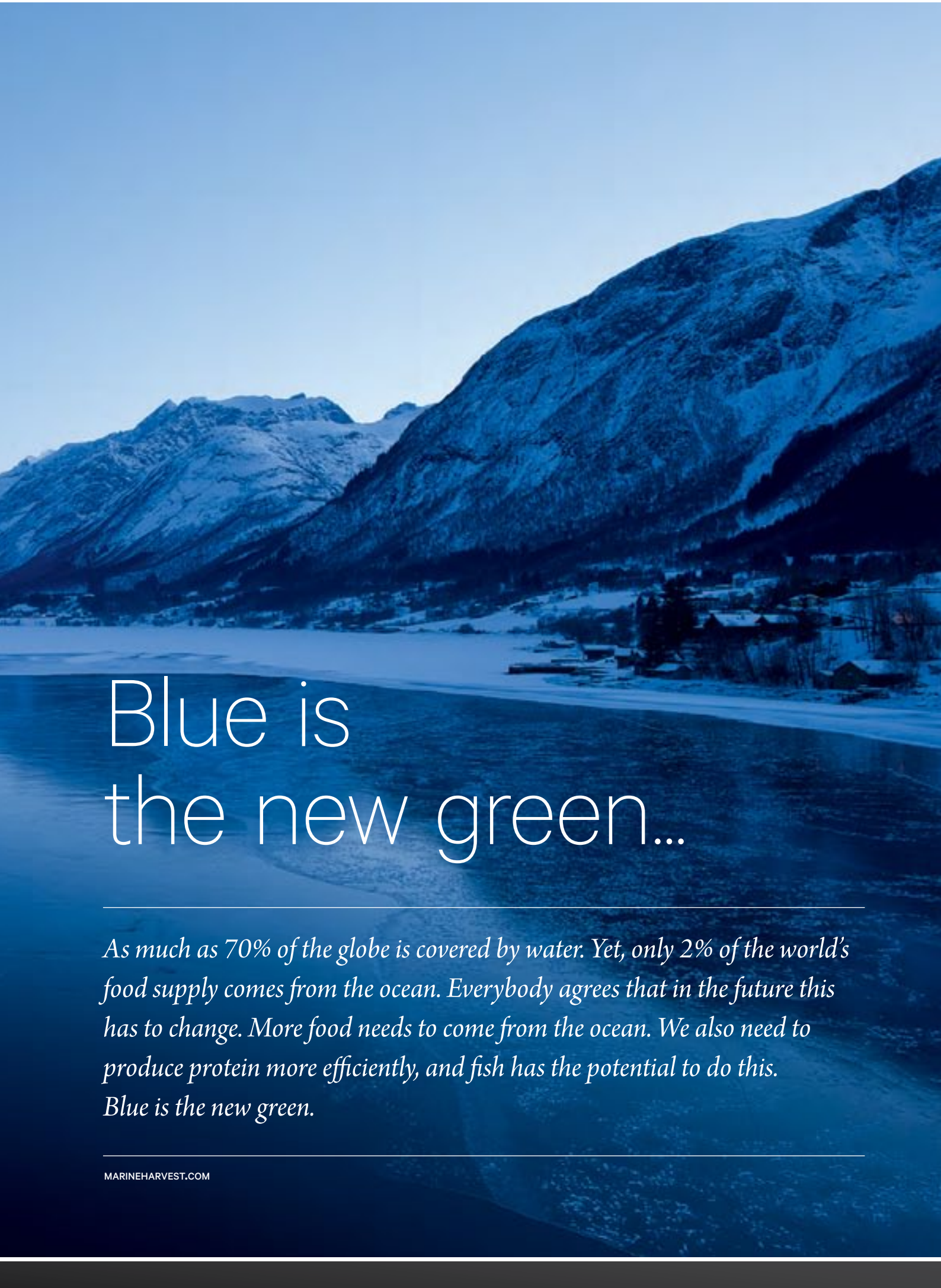

Blue is the new green...

As much as 70% of the globe is covered by water. Yet, only 2% of the world's food supply comes from the ocean. Everybody agrees that in the future this has to change. More food needs to come from the ocean. We also need to produce protein more efficiently, and fish has the potential to do this. Blue is the new green.

MARINEHARVEST.COM

CLIMATE CHANGE – A ROLE FOR LAWYERS?

By Andrew Whitehead, senior partner of SGH Martineau LLP, a UK law firm with offices in London, Birmingham and Brussels. Through its membership of Multilaw, the firm has access to over 8,000 lawyers in more than 150 commercial centres around the world, giving it a truly global reach.

As an international business law firm with a specialist energy and environmental practice, we look forward to COP 21 in Paris next year with an element of self-interest.

A climate deal is needed to boost carbon prices.

Implemented through tax or emissions trading schemes, a strong rising carbon price will create long term signals encouraging investors to put private capital into a range of low carbon infrastructure projects. Lawyers will be needed to make these happen.

As a UK law firm with a substantial client base across the European green economy, anything that acts to stiffen the resolve of the EU to pursue its own ambitious climate change policies will mean more deals done on our home turf.

Furthermore, the increased focus on adaptation will hopefully culminate at COP 21 with agreement on an international mechanism to better protect vulnerable populations against extreme weather and rising sea levels.

Adaptation is another area that has introduced new problems for lawyers, not least the potential for legal liability for climate change impacts attaching to large emitters, and the trend towards litigation as a means of cost recovery.

But our desire for a new climate deal is about much more than this.

The legal sector is a significant employer globally, and our workforce is our principal asset. Our people care passionately about our planet, and want to be part of an organisation that shares their concerns. Having a responsible business model is a key factor in staff recruitment and retention.

The same goes for the other principal stakeholders in our business, our clients. They increasingly seek out suppliers whose principles align with their own.

So, having a strategic plan embracing a commitment to sustainability makes sound business sense to us.

Lawyers can also influence policy makers and legislators, and as respected advisers have a leadership role to play in engaging in a positive way with clients and other stakeholders.

This is especially true of in house lawyers, many of whom have a crucial role at board level in helping set the strategic direction of their employer. And with the Carbon Disclosure Project, the sustainability agenda looks set to remain a board issue.

Furthermore, intellectual property (IP) lawyers are increasingly taking centre stage. The development and transfer of clean tech is recognised to play a vital role in both mitigation and adaptation strategies.

Whilst it is true that the monopolies created by IP law can operate to block access to technology and its distribution, a means of securing a return on investment is necessary if innovation is to be nurtured.

Much is made of the achievements of the Montreal Protocol in the context of ozone depletion, and those lessons and others can surely be brought to bear in finding a legal mechanism that meets the twin goals of technological innovation and its equitable dissemination.

As a law firm, our approach is not unique. SGH Martineau is one of the Executive Members of the Legal Sector Alliance (LSA), an inclusive movement of legal sector organisations that understands the global imperative to protect our environment for future generations.

Made up of over 300 legal organisations, the LSA is committed to reducing the carbon footprint of the UK legal sector and promoting sustainable business practice in the legal profession. Established in the UK for six years, the LSA now works with counterparts in the USA and Australia.

This model of sector collaboration is surely the way forward, and illustrates the unique role that lawyers can play in making a contribution to one of the greatest challenges mankind has faced.

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MAKING A POSITIVE DIFFERENCE

Our respected team of UK energy, regulatory and environmental lawyers has been advising on climate change law and policy for many years.

Our work is varied, and includes advising on power generation licensing and regulation, network infrastructure and power system operation including smart grid developments, renewable power and heating schemes, energy efficiency schemes including smart metering and low and zero carbon building policies, biofuels and decarbonised transport policies, as well as emissions trading schemes and green taxation.

With an office in Brussels, we are located at the heart of European Union decision making, and our membership of Multilaw, a leading multinational association of independent law firms, gives us unrivalled access to over 8,000 lawyers in more than 150 commercial centres around the world.

SGH Martineau is also an Executive Member of the Legal Sector Alliance, an inclusive movement of legal sector organisations that works together to reduce the carbon footprint of the UK legal sector and promote sustainable business practice in the legal profession.

To hear more about how we can make a positive difference to you please get in touch -
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LEGAL SECTOR ALLIANCE
ACTING ON CLIMATE CHANGE

COSTA RICA: GREEN AND GROWING DESPITE CLIMATE CONCERNS

Costa Rica is vulnerable to climate change but benefits from green policies, argues the country's environment minister.

By Edgar Gutiérrez

Costa Rica is optimistic following the UN climate summit in New York this September, aimed at stepping up the global response to climate change.

While emission cuts are generally considered a massive cost that curtails growth, our experience has taught us that dealing with climate change benefits the economy. We're also certain that international cooperation on climate change works, and so expanded efforts could achieve considerably more.

Reaching similar conclusions, the report from the Global Commission on the Economy and Climate chaired by the Former President of Mexico, Felipe Calderón, presented comprehensive evidence for why pursuing climate change objectives helps to achieve economic ones. But how precisely can dealing with climate change drive a country's growth?

Resilience

Firstly, for Costa Rica, our region is highly vulnerable to climate change.

In April, we hosted a Climate Vulnerable Forum meeting where government experts from Central America and the Caribbean shared experiences in tackling these vulnerabilities. We heard from colleagues in Panama, whose San Blas archipelago has already witnessed the submergence of islands due to rising seas and faces the imminent prospect of further losses. Delegates also visited nearby Cahuita, on Costa Rica's Caribbean coast, where infrastructure that stood only a few years ago on dry soil now lies in the sea.

It is not just the sea that's rising, it is also the heat. We are grappling with hotter, more drought-prone conditions that research has shown eats away at the productivity and health of the outdoor workforce, and at agricultural and marine production, potentially on a sizeable macroeconomic scale. The entire Mesoamerican isthmus is also exposed to increasingly extreme storms on two flanks, the Caribbean and the Pacific, with all the damages these entail.

Adaptation

Not responding to these concerns means relinquishing part of our own hard-won prosperity, so our investments in adapting better and managing these risks are helping to keep costs down. These views have been highlighted through several events involving Costa Rica and countries vulnerable to climate change held in conjunction with key international meetings, including at the UN Conference on Small Island Developing States in Samoa earlier this month.

Costa Rica also reaps economic benefits from reducing greenhouse gas emissions as we work towards our 2021 national carbon neutrality goal. Since well over 90% of our electricity generation is sourced from renewable energy that might sound like an easy target. At second look though, almost half of our overall energy production is fossil fuel based, in particular because the transport sector relies almost exclusively on oil, as in most countries.

Because we produce no oil, we import it all from overseas. In 2012, that meant around 2.5 million tons of oil products representing over 1.5 billion dollars and about 70% of our trade deficit that year, or more than 3% of our GDP. According to the International Energy Agency we are not alone: the EU's net fossil fuels imports stood at the equivalent of nearly 1 billion tons of oil in 2012, while the US, China and India, all of whom buy vast quantities of overseas fossil fuels, experience similar current account pressures.

Clean energy

We might be able to meet some of our fossil fuel needs by exploiting national reserves, but only in July our president, Luis Guillermo Solís, together with the Ministry of Environment and Energy, extended an existing ban on petroleum exploration and extraction for another decade. We see no benefit risking environmental disasters associated with exploiting these resources when our UNESCO world heritage national parks and buoyant tourism sector are on the line.

Nor do we aspire to the types of air pollution that the World Health Organization has characterized as the largest single environmental health risk, responsible for one in eight of all deaths globally, not to mention enormous economic costs. These and other concerns underpin the low-carbon direction we have set for our economic development.

In doing so, Costa Rica has pursued massive growth in renewable energy, which has almost doubled to just over half the national supply in the past decade. International cooperation has helped a lot: 16 UN Clean Development Mechanism projects have leveraged around US$350 million of investment in projects spanning waste, hydro and wind energy, among others. Moreover, we recently signed a bilateral agreement with Japan that has enabled a US$550 million geothermal project to move ahead near our Rincón de la Vieja Volcano National Park. We could soon be exporting renewable electricity.

Green economy

Perhaps our biggest success though is a 1997 law that enables forest landowners to be paid for the carbon sinks and ecosystem amenities they so clearly provide: secure water catchment for hydropower and industry, biodiversity and pollination services for agriculture, and scenic beauty for the tourism sector. The program is responsible for the largest part of our rebound from a state of almost 80% deforestation in the late 1980s. Today over half of Costa Rica is forest again. With help from the UN's REDD+ scheme, it will continue to expand.

So how have we fared? Costa Rica was the second fastest growing economy in Central America over the entire last decade. We also made significant gains in human development and top the Happy Planet Index. While not the only factors in play, we certainly believe our climate change policies benefit us and will do for others. We're also convinced Costa Rica is not an isolated case. The 2014 Climate Summit emphasised the global potential for efforts like ours on much grander scales.

Edgar Gutiérrez is Costa Rica's minister of environment and energy.

This is the first article in a series on dealing with climate vulnerability, developed in partnership with the UN Development Programme and the Climate Vulnerable Forum. You can find similar articles at www.rtcc.org

THE ISLAND POET WHO SILENCED THE WORLD

In September Kathy Jetnil-Kijiner stood before the UN and warned leaders her country is slipping beneath the waves. She tells Sophie Yeo why islanders are not giving up hope.

By Sophie Yeo

In September, 26-year-old Kathy Jetnil-Kijiner took to a New York stage to recite a poem about her daughter and the sea.

This particular stage has a habit of hosting historic scenes, from Fidel Castro's four-hour speeches, to bouts of shoe-banging by Nikita Khrushchev. Minutes earlier, it had been occupied by Leonardo DiCaprio and Al Gore.

But for her own five minutes at the podium of the United Nations General Assembly, Jetnil-Kijiner wanted to talk about the Marshall Islands.

The world leaders whom Jetnil-Kijiner addressed at the UN Climate Summit were presumably well-versed enough in world geography to know what she was talking about, but many people have never heard of the tiny islands.

"Show them where it is on a map," she writes in an old poem, addressed to her American friends. Yet these islands are her home – and now the home of her seven-month-old daughter, Matafele Peinem.

In photographs, the Marshalls look magical. Each of the 24 coral reef islands encloses a lagoon, where sailors moor fishing boats and canoes.

But their future is cloudy. "Men say that one day / that lagoon will devour you," recited Jetnil-Kijiner at the summit. "They say it will gnaw at the shoreline / chew at the roots of your breadfruit trees / gulp down rows of your seawalls / and crunch your island's shattered bones".

Her words prove prophetic. Two weeks later, the Marshall Islands are flooded – again.

The sea is rising

Jetnil-Kijiner speaks to RTCC in the midst of the clean-up effort. Families have had to take time off from work to repair their houses and get rid of the debris choked up by the sea, she says. Her little girl – to whom her poem was addressed – gurgles and sneezes in the background.

Life in the Marshall Islands moves to the rhythm of the Pacific Ocean. Lying just two metres on average above sea level, they are extremely vulnerable to the rising sea level caused by climate change.

Even so, says Jetnil-Kijiner, there should never have been this much damage in October. King tide season, when the water is the highest, is not due till March.

"I've talked to my parents, to the elders in my community, and they all say the same thing: they've never seen it happen this frequently and this badly," she recounts.

Everyone on the islands knows that climate change is to blame, she says. Higher sea levels mean that, when the tides come in, they are invading more of the shorelines. Even the dead are affected: spring tides in April washed the skeletons of 26 Japanese soldiers from their graves on the isle of Santo.

Scientists have also sounded the alarm. The IPCC warned in its most recent report that up to 15% of small islands could be wiped out by a sea level rise of one metre. In parts of the Pacific, the ocean is rising by up to 12mm a year – four times faster than the global average – according to the UN Environment Programme.

Little girl

The UN chose Jetnil-Kijiner to perform based on one of her previous poems, 'Tell them about climate change in the Marshall Islands'. Here, she tells her American friends to spread the message of the Marshall Islands, how "we don't want to leave / we've never wanted to leave" – now a real prospect for the vulnerable islanders.

She thought this was the poem she would read at the summit, but the UN had other ideas, asking her to write something new – and memorise it – two weeks ahead of the big day.

Her poem, they told her, should speak not just for the Marshall Islands, not just the Pacific, but for the whole of civil society. "That's the entire world," she muses – one Marshallese voice for seven billion people.

She had only recently given birth to her first daughter, Matafele Peinem. She remembers she thought at the time: "I don't know how to write on behalf of the entire world, but I can write to my daughter, so why don't I just do that?"

This is how one mother's concern for her "seven month old sunrise of gummy smiles" ended up moving the world's leading dignitaries to tears. It was a show of empathy that no news report

Photo: ©UN Photos.

or statistic on the fate of the Marshall Islands – or Bangladesh, or Gambia, or the Arctic – has managed to evoke.

"A lot of time people brush off art as something that's not really necessary, especially in these conversations regarding politics and science, but I think art is important," says Jetnil-Kijiner. "It touches your humanity."

Lost lands

Tears dry quickly. During the summit – feted as the most important climate gathering since Copenhagen – there was a smattering of financial pledges, warm words of solidarity, and a large amount of bluster.

It was certainly not enough to secure Matafele Peinem a future on the same land where her mother writes poetry, where her grandmother became the first islander with a PhD, and where her ancestors before her fished and chanted.

World leaders will meet again in Paris next year, where they have agreed to sign off a deal that will prevent dangerous global warming. So far, efforts have been shaky.

"It concerns me: how effective am I at the end of the day?" wonders Jetnil-Kijiner. "And I don't know how effective I am, but it's important to keep moving forward, to keep pushing forward, even if it seems as though we've been doing this for so long and we're so weary."

"I think the value of investing in our youth is the fact that they can pick up the torch when our elders have grown weary from the fight, and they can keep continuing that fight."

But when she said in her poem that "no one's drowning", the pathos was clear. Already, people have started to move away from the islands of the Pacific.

In her poem, she referred to Taro Island in the Solomons, which is preparing to relocate entirely as rising sea levels and tsunamis make life there impossible. She apologised to the Carteret islanders of Papua New Guinea, whose 40 families became the first community to officially relocate because of climate change in 2009.

And she worries that poetry might end up a medium to preserve the memory of a land already lost.

At the University of Hawaii, she studied a masters in old Marshallese chanting and storytelling, spending the summer of 2013 interviewing the elders of the island about their traditions.

Like these chants, which she says connect her to the islands' pre-colonial past, the words of the poets could one day be the only way for her descendants to connect with a land that has sunk beneath the waves.

Global movement

Jetnil-Kijiner knows the problem is urgent – but having a daughter has made it more so. "Holding her and looking her, and seeing how vulnerable she is reminded me of how vulnerable we are," she says.

But she also knows that there are people on her side. She understood this for the first time when researching the global climate movement for her poem, she says.

Separated by thousands of miles from Washington, London and Beijing, she says she had no idea of the scale of activity taking place, not just to apply political pressure, but also to drive action at a grassroots level.

"I thought we were alone," she says. "I was moved that there are so many people around the world trying to do so much to create change. It made me want to speak to that movement and encourage it."

Pacific islanders are leading the way. In October, 30 'Pacific Warriors' sailed in handmade canoes to the world's largest coal port in Australia, where they attempted to block ships from entering and leaving the terminal.

And the weekend before Jetnil-Kijiner addressed world leaders in New York, half a million people took to the streets in cities and villages across the world in the largest ever climate march.

The Marshall Islands may be specks in the ocean. Their tiny green squiggles will always be hard to find on a map.

But that will be no absolution if they must be inked over with blue.

HOW CLIMATE CHANGE AFFECTED THE WORLD'S WEATHER IN 2013

Scientific review shows heatwaves in China, Japan, Korea and Australia were made more likely by global warming.

By Megan Darby

Man-made climate change "greatly increased" the risk of extreme heat waves as seen in China, Australia, Korea and Japan last year.

That was the conclusion of a scientific review of 2013's extreme weather events produced by 92 scientists from 14 countries and published in the Bulletin of the American Meteorological Society.

The role of human activity was less clear in droughts, heavy rainfall and storms.

The report's authors stressed that did not mean there was no human influence in these events. It simply means that recent analyses could not distinguish it from natural variability.

Here is what the review had to say about extreme weather across eight regions in 2013.

1. California drought

California's governor declared a state of emergency in January after 2013 turned out to be the state's driest year on record. Officials brought in water restrictions and prepared for wildfires.

The jury is still out on whether climate change is making this type of drought more likely.

One study found this "exceptional" drought was linked to a large weather system over the northeastern Pacific. This system is expected to come up more frequently under the influence of greenhouse gas emissions.

Other models showed global warming increases air humidity in the northeastern Pacific, cancelling out the effect. The overall risk of drought has not changed since the late 19th century, according to one reading.

Given the severe impacts of water shortages in a state of 38 million people, lawmakers are not waiting for further research.

They have passed a US$687 million emergency drought relief package with measures to boost resilience, including new wells and pipelines.

2. Australia's "angry summer"

Dubbed the "angry summer", Australia's hot season of 2012/13 saw 123 weather records broken across Australia.

The following summer was even angrier, with the Climate Council reporting 156 records tumbled. The country saw 40C+ temperatures, rainfall lows and large-scale bushfires.

Human influences have made summer heat waves in Australia twice as intense and three times as frequent, scientists found.

Annual average temperatures were at or near record levels across Australia and the western tropical Pacific in 2013.

On this case, the scientists were clear: hot weather on this scale is almost certainly the result of human activity.

Such persistent high temperatures were "either completely outside of, or extremely rare in, the distributions of modelled natural variability".

This region is part of a bigger picture of rising global temperatures, the review said.

"Although global warming has been described as 'pausing' since 2000, global temperatures remain at anomalously high levels, and warm annual and seasonal temperature extremes continue to far outpace the occurrence of cold annual extremes."

3. New Zealand drought

New Zealand experienced its worst drought in 70 years,

Trees cocooned in spiders webs, an unexpected side effect of the flooding in Sindh, Pakistan. Photo: © Department for International Development.

which was caused by high pressure weather systems over the summer.

Such pockets of high pressure have been made more likely by climate change, scientists found, although natural variability also played a role.

4. Korea heatwave

It was a bad time for South Korea's nuclear reactors to be forced offline for safety testing (officials were found to have faked some certificates).

Temperatures hit an all-time high of 39.2C in August 2013 and many people had no air conditioning due to power shortages.

The death rate in Seoul rose 8.4% on the back of the heatwave.

There is more of the same in store, according to the latest study: extremely hot summers in the country have become 10 times more likely as a result of manmade climate change.

5. Japan heatwave

Thousands were hospitalised with heatstroke in Japan that same month.

The mercury reached a national record of 41.0C on the southwestern island of Shikoku.

This was mainly down to natural variability but manmade climate change played "a significant role", said the scientists.

6. Hot China

The 2013 annual mean temperature in China was the fourth highest since 1961 and 0.6C higher than normal.

July and August were particularly intense, with temperatures exceeding 35C for 31 days straight in Shanghai, the largest city.

The effect of human activities on the climate of central eastern China has been detectable since the early 1990s, according to the scientific review.

Human influence was responsible for around half of the extra heat last summer, it said.

7. Northern India floods

In June 2013, a bout of heavy rainfall over four days wreaked havoc in northern India.

Some 5,700 people were declared missing, presumed dead, in the resulting floods and landslides.

There is some evidence human-induced climate change increased the likelihood of such heavy rain, scientists found.

Limited observational data made it hard to quantify precisely the impact of manmade carbon emissions, they said.

8. European mix

There were record high temperatures across Western Europe in summer 2013, with a seasonal average 1.33C higher than the in the period 1964-93.

Human activities played "a substantial part" in the hot, dry weather, said scientists.

Other parts saw heavy rainfall, causing flooding in the upper Danube and Elbe basins of central Europe. Southern Europe had its second wettest winter since 1948.

The Pyrenees mountains came under a higher than normal volume of snow. Germany and Denmark experienced a violent storm, named "Christian" or "Allan" depending on the country.

Analyses of these events found no evidence climate change had played a hand.

Meanwhile the UK experienced an unusually cold spring, with snowdrifts killing thousands of newborn lambs.

Conditions like this are increasingly rare with manmade climate change, scientists found, becoming 30 times less likely.

ANALYSIS: FLAWED ECONOMICS CLOUDS CASE FOR CLIMATE ACTION

Current government models assume perfect markets and no costs from pollution, skewing views on policies to cut carbon.

By Gerard Wynn

One of the main findings of the New Climate Economy report, published in September, is that an economic fog of flawed models and numbers is stopping decision-makers from seeing that we can cut carbon emissions and boost economic development at the same time.

Seven countries commissioned the report, including Britain, South Korea and Indonesia, with the aim of improving economic decision-making, and especially helping world leaders who attended the UN's high level meeting on climate change in New York.

The report finds that, in general, the problem of climate change has been misconceived.

The debate, to date, has often been that we must try to avoid climate change, which will lead to higher sea level rise, mass extinction of species and more frequent deadly heat waves, but also beware of higher costs of climate action, such as replacing coal with more expensive solar power.

The New Climate Economy (NCE) report argues a different view.

The present day is pivotal, it says, because we are about to invest colossal sums in infrastructure, over the next 15 years, as urbanisation continues apace and emerging economies drag themselves out of poverty.

We can choose between continuing to invest in the economic model of the present and the last decade, or a low-carbon, climate-resilient alternative.

The report finds many flaws in the present approach, including a failure to recover pre-financial crisis growth as productivity gains have sagged; growing inequality; and government and market failures.

Regarding investment, it finds that the two approaches cost about the same, once you factor in the lower lifetime operational costs of low carbon energy which offsets a higher capital cost; greater productivity of low-carbon technologies; lower grid costs from avoiding large, centralised power plants; and better balance of payments and improved security of supply from lower fossil fuel imports.

The present debate about cost misses the point, if the overall difference is too close to call. The question instead becomes what kind of quality of life, climate and air people want for the rest of this century and beyond.

On these criteria, the low-carbon model wins hands down: more efficient, low-carbon infrastructure will improve air quality and reduce deaths from lung and heart disease; cut the cost of services in more compact, mixed-use cities; protect forests and green spaces; and reduce emissions of greenhouse gases, and so avoid climate change which threatens to undo the gains of economic growth.

Economic fog

The obvious and perhaps most interesting question is, if it is so simple, why is the world not already on such a path?

The new report presents some interesting case studies for why the world remains on its present course. These include: flaws in the default economic tools used by finance ministries; and the political difficulty of embracing change.

In its chapter on economics, the report shows failures in the conventional economic models which finance ministers use to choose investments, plot growth and balance budgets.

The models are tuned to assume we live in a world of perfect markets. For example, they assume that there is no waste as a result of subsidies which make energy cheaper to consume; no costs from sprawling cities which make transport and city services more expensive and pollute the air; and, in some cases, no climate impacts from greenhouse gas emissions.

The models are built in this way because it is impossible to model the real world, and so it is necessary to draw the line with certain assumptions. But these assumptions make a low-carbon transition appear more expensive, because the market failures they

ignore are precisely some of the main benefits of a low-carbon approach.

A study commissioned by the green groups WWF and Friends of the Earth (quoted in the NCE report), for example, examined the British Treasury's computable general equilibrium (CGE) model, and found that accounting for the health benefits of reduced air pollution from burning fewer fossil fuels reversed the net cost of climate policy into a net benefit.

A related, systematic problem in national decision-making is the standard use of gross domestic product (GDP) as a measure of wealth, which does not account for the depletion of natural resources, or damage caused by pollution.

The problems of these flawed economic tools are compounded, the report argues, by the political difficulty of changing course, because of a tendency for historical decisions to determine present and future ones, called path dependence.

For example, governments may invest in innovation to enhance present technologies, such as the internal combustion engine or oil and gas extraction, rather than recognise the potential of emerging technologies for unleashing energy savings in consumption.

Governments help determine the path of innovation through their spending on R&D, which in turn attracts entrepreneurs, and ultimately consumers, as well as regulations including fossil fuel subsidies.

Also inclining governments towards the status quo is the influence of elites, who have generated their wealth from present economic structures, and who may exert undue sway on preserving things as they are.

Multiple benefits

The most concrete example of how market and government failures can weigh against political support for climate action is the damage to public health caused by burning fossil fuels.

In its chapter one, the NCE report showed how the health damage from burning fossil fuels, expressed per tonne of carbon dioxide (CO2), was about double the damage from climate change, also expressed per tonne of CO2.

The most important health risk is from minute, air-borne particles with a diameter smaller than 2.5 micrometres (PM2.5). Such smoke-like particles increase they prevalence of lung cancer, chronic obstructive pulmonary disease, ischemic heart disease (from reduced blood supply) and stroke.

NCE-commissioned research estimated that in China, PM2.5 pollution was linked to a median estimate of 1.23 million premature deaths in 2010, with health damage equivalent to 9.7-13.2% of China's GDP.

In India, PM2.5 pollution was estimated to cause a median estimate of over 627,000 premature deaths, and to generate health costs valued at up to 5.5-7.5% of GDP.

The NCE report cited estimates for the total health damages caused by burning fossil fuels at $73 per tonne of CO2, in the world's 15 largest carbon emitters.

Such estimates are about double the US government's estimate for the cost of climate damage per tonne of CO2 (about $30 per tonne). Accounting for health is therefore vital in an economic analysis of the net impacts of climate policy.

Tilting policy decisively in favour of climate action will depend on revealing other market failures, and helping governments devise alternatives.

In the case of ending fossil fuel subsidies, governments must find new, more efficient ways to support people who cannot afford to pay their energy bills, for example.

The NCE report shows that an important step in the shift to a low-carbon pathway is as simple, and difficult, as banishing an overly simplistic way of looking at the global economy, and for governments to act more rationally.

Follow Gerard Wynn @gerardfwynn
Download the New Climate Economy report from:
http://newclimateeconomy.net/

EIB: CLIMATE ACTION IN LATIN AMERICA

By Jonathan Taylor, European Investment Bank Vice President, Responsible for Environment and Climate Action and Román Escolano, European Investment Bank Vice-President, Responsible for Latin America.

The European Investment Bank (EIB) has been active in Latin America since 1993.

Today, climate action and economic development are the main focus of EIB's activities in the region. Climate action projects can cover a wide range of sectors: from renewable energy, energy efficiency, and sustainable transport to water efficiency, sustainable industry processes and forest conservation.

While the EIB has traditionally co-financed large infrastructure projects through long-term loans, we are now mobilizing a wide array of innovative financial products to reach crucial sectors such as energy efficiency and conservation.

Low carbon infrastructure

In Latin America, the majority of EIB's lending supports energy investment.

These include construction, extension and rehabilitation of renewable energy power plants (hydropower, wind, and geothermal) but also the extension and upgrading of transmission networks to reduce energy losses in the grid as well as other energy efficiency schemes.

Many countries in Latin America see the benefit of diversifying their energy mix and reducing their dependence to fossil fuels. In Costa Rica, a country aiming to become carbon neutral by 2021, the EIB is financing the construction of a hydropower and a geothermal plant.

Others, such as Brazil, Mexico and Nicaragua, are also increasing their renewable energy production capacity.

Over the years, the EIB has also partnered with a number of national or regional banks to support climate change mitigation projects through "framework loans".

The most recent framework loan, approved this year, was signed with Banco de Santander in Chile, for the amount of EUR 150 million to be on-lent for renewable energy and energy efficiency projects in Chile.

In the area of sustainable transport, the EIB is financing the ambitious construction of Quito's first metro with a loan of EUR 200 million to the Republic of Ecuador.

The new metro line, which will benefit around 400,000 people, will not only ease traffic congestion in Quito and its suburbs, it will also do its share for climate change mitigation.

Fuel consumption and greenhouse gas emissions are expected to decline thanks to an expected shift from private vehicles to metro.

This switch in transport modes in the city will contribute to a significant improvement in air quality, with savings of a remarkable 30,000 tonnes of CO2 emissions that would otherwise be produced by motorised vehicles.

The financing was undertaken alongside the International Bank for Reconstruction and Development, the Inter-American Development Bank, the Corporación Andina de Fomento as well as local government resources.

Innovative finance

Investments in funds are a different innovative vehicle to support climate action. Although they represent a smaller share of EIB's climate action activities, they are charting a path for new ways of financing a low-carbon and climate resilient economies.

The Global Energy Efficiency and Renewable Energy Fund (GEEREF), for example, is a fund of funds advised by the EIB which invests in private equity funds focusing on renewable energy and energy efficiency projects in emerging markets.

The fund has raised EUR 112 million in funding from the European Commission, Germany and Norway and is currently raising additional funds with amongst others the EIB having contributed EUR 10 million.

In Latin America, GEEREF has already invested in two

La Venta windfarm, Mexico.

Photo: © Iberdrola.

Founded in 1958 under the Treaty of Rome, the European Investment Bank is a key instrument of EU public policy and operates in more than 150 countries. The EIB is a leader in the financing of projects tackling climate change.

In 2013, we invested EUR 19bn in climate action projects, and this figure reaches EUR 88bn for the period 2009-2013. We complement our financing instruments with a range of technical assistance tools to provide rounded solutions for commercially promising climate initiatives.

From 1993 to 2013, the Bank has supported 80 projects with a signed total of about EUR 6 billion in 13 Latin American countries.

Construction site of the Quito Metro, Ecuador. Photo: © Metro de Quito.

funds: the Emerging Energy Latin America Fund II, mainly active in Brazil, Mexico and Peru; and MGM Sustainable Energy Fund investing in Colombia, Mexico, Central America and the Caribbean region.

One of the most pioneering aspects of these equity funds is their investment in energy efficiency projects.

Thanks to their detailed expertise and the provision of capital for the purchase of equipment, the funds and their management teams are helping hotel chains, municipalities, shopping malls, and other public and private entities save both energy and money.

In return, the fund receives an agreed percentage of the savings in energy expenses. It's a true win-win solution for the fund and the business or public entity.

Protecting ecosystems

Despite the clear importance of investing in sustainable infrastructure and energy efficiency, the UN's Intergovernmental Panel on Climate Change (IPCC) estimates that in Latin America it is the trends in land-use and continued deforestation that have the potential to alter the global carbon balance.

It thus becomes crucial to protect the region's diverse and extensive natural ecosystems. Funds such as the Althelia Climate Fund or the Eco-Enterprises Fund are aiming to do just that.

Launched in 2013, Althelia meets REDD+ criteria and will invest in about 20 projects around the world in the area of sustainable agriculture and environmental services, including carbon sequestration and biodiversity, with a particular focus on Africa and Latin America.

To protect standing forests and in accordance with REDD+, a financial value is given to the carbon stored in these forests, in the form of carbon credits sold in part to companies to facilitate their corporate and environmental responsibility objectives.

Moreover, additional revenues are generated by associated projects such as the sale of environmentally certified commodities.

In September 2014, Althelia made its first investment of EUR 9.15 million in Latin America in Peru to finance the long-term conservation of 570,000 hectares of natural forest of the National Reserve of Tambopata and National Park Bahuaja-Sonene, areas regarded as "biodiversity hotspots".

The Eco-Enterprises fund also works to protect vital ecosystems and provide alternative livelihoods for local people, and does so by providing loans or equity to businesses operating in the field of sustainable agriculture, sustainable forestry and eco-tourism in Latin America.

Eco-Enterprises not only measures the financial performance of the companies it finances but also their environmental and social performance through a comprehensive evaluation system. To date, Eco-Enterprises estimates that 860,000 hectares of land have been conserved thanks to the businesses it supports.

Holding the COP meetings in Peru this year is a way of reflecting the importance of climate finance for the region and local engagement on the issue of climate change. The EIB's firm commitment to Latin America, for its part, will remain strong in the coming years, especially in the area of climate.

The EU recently approved a new mandate for EIB's overall activities outside the EU for 2014-2020, with a budget for Latin America of EUR 2.3 billion. In addition, a dedicated EUR 1.5 billion facility for projects outside of the EU was also set up this year to finance projects contributing to climate change mitigation and adaptation, biodiversity and environmental protection.

With its extensive experience in appraising and financing projects, its in-house sector expertise, high environmental and social standards, the EIB is well placed to support Latin America in meeting its climate action goals.

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MAKING CITIES MORE SUSTAINABLE

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AN INTEGRATED APPROACH TO SUSTAINABLE CITIES

By Saliha Dobardzic and Xiaomei Tan

The Global Environment Facility (GEF) is launching a special initiative, the Sustainable Cities Integrated Approach Pilot. The GEF engagement in cities can facilitate pilot initiatives that produce both global environmental benefits and local benefits. In addition, the initiative will seek alignment with broader, overarching development goals, including those of the post-2015 Development Agenda.

Why Cities?

Cities are a natural place for integrated solutions for ecosystem management. The urban demand for energy, housing, infrastructure, natural resources, land, and other urban services can be provided by facilitating integrated planning and management frameworks, thus contributing to a green economy while leveraging local benefits.

Cities control policies and vital systems that can directly affect global environmental conditions, such as infrastructure development, natural resource management, and setting environmental standards. For example, nearly 75 percent of cities have direct control over transit, about 60 percent control water supply and wastewater treatment, and around 80 percent have control over roads and residential waste collection. The projected urban development needs in the coming decades present a window of opportunity for cities to manage such development sustainably, from the planning and design phase.

This is critical, as cities consume over two-thirds of global energy supply, and are responsible for 70% of carbon dioxide (CO2) emissions.[1] A significant share of growth in the per capita greenhouse gas

High rises and hotel buildings in Punta Pacifica, Panama City, Panama. Photo: Gerardo Pesantez / World Bank.

Bus Rapid Transport (BRT) system in Mexico City, a project partially funded by the GEF, is reducing CO2 emissions from traffic by an estimated 60,000 to 80,000 tons a year. Photo: Design for Health

emissions (GHG) in developing countries is attributed to urban areas, through energy use, with emissions from transport, households, and industries.

Cities are also uniquely vulnerable to climate change. Fourteen of the world's 19 largest cities are located in port areas. Around 360 million people reside in urban coastal areas that are less than ten meters above the sea level. With sea level rise and increased storm activity, these areas are likely to face coastal flooding, physical damage to infrastructure, and other impacts such as compromised water and food security.

GEF's history in supporting urban projects

GEF first started investing in sustainable cities projects in 1999, when it simultaneously allocated $25 million to improve energy efficiency of Beijing's district heating and $12 million to support hydrogen fuel cell buses in Sao Paulo. Today, the GEF urban portfolio represents one of the largest sustainable cities programs in the world: 100 projects mitigate climate change in over 120 cities across 63 countries, with $580 million committed and an additional $7.23 billion leveraged in co-financing from the private sector and elsewhere.

A successful example of a GEF urban initiative is the Tianjin eco-city project, which is recognized as a model eco-city in China. The GEF grant financed the establishment of policies to help the eco-city become a resource efficient and low-carbon emission city. Likewise, an estimated 15 percent of adaptation programming in the GEF can be classified as urban projects, and an additional 59 percent as having direct relevance to urban settings. Examples of urban projects that address resilience vary from broad urban development and spatial strategies, to specific zoning and building codes, to flood management interventions such as the prohibition of building within known floodways. Such measures have been included in projects for Muanda in the Democratic Republic of Congo[2], and Yaoundé in Cameroon[3].

Expected results

Through the Sustainable Cities Integrated Approach Pilot, the GEF expects to leverage its unparalleled experience toward investing in integrated solutions to multiple environmental problems. The following are the key results expected.

(a) In five to ten years, the participating pilot cities are recognized as leading examples of sustainable urban and territorial management, with clear and quantified global environmental improvements.
(b) Cities adopt performance frameworks for generating and monitoring environmental and social-economic benefits.
(c) Urban government leaders and officials in developing countries have the expertise and policy means to address global environmental concerns in an integrated manner, with local action.
(d) National governments create favorable policy environments to enable city governments to address global environmental concerns at the local level.
(e) Partner institutions adopt GEF-supported integrated urban development and management strategies.
(f) The merits of addressing drivers are recognized as successful approaches among different Conventions, leading to more integrated initiatives at the country/regional levels.

GEF
www.theGEF.org

1 C40 Cities (2012). CDP Cities 2012 Global Report.https://www.cdproject.net/cdpresults/cdp-cities-2012-global-report.pdf
2 Resilience of Muanda's Communities from Coastal Erosion, Democratic Republic of Congo, $5.355 million ($16.5 million in co-financing), UNDP
3 Enhancing the Resilience of Poor Communities to Urban Flooding in Yaoundé, Cameroon, $4 million ($145 million in co-financing), AfDB

IN REVIEW: BAN KI-MOON'S CLIMATE SUMMIT

New York played host to an extraordinary week of climate-related events in September, with a mass march and heads of state summit. But did it make a difference?

By Ros Donald

There's a renewed confidence in the way people are talking about the possibility of international action on climate change.

On September 21, an estimated 400,000 people from all walks of life flooded the streets of New York, as part of a global demonstration calling for global emissions cuts. Two days later leaders, businesses and campaigners gathered to discuss how they can increase momentum toward a global deal to achieve them.

Despite beaming late summer sunshine, the joyful atmosphere of the march did not reach the UN compound on 42nd Street and 1st Avenue. Nor were there any of the corridor conversations and NGO side events that characterise a typical climate negotiation.

But few were expecting any great surprises that would set delegates abuzz. The 2014 climate summit was what one onlooker described as a "pep rally" – nothing to frighten the horses.

Many hoped for pleasant surprises. They knew there would be announcements from national and business leaders keen to show they are keeping up momentum toward a global climate deal and ensure others are doing the same.

Leadership

Announcements there were. Ahead of the summit, the World Bank revealed 73 countries including China, Russia and South Africa, 22 states, provinces and cities, and over 1,000 businesses and investors have signalled their support for putting a price on carbon emissions.

On the day, US president Barack Obama announced that his government would incorporate the need to adapt to the effects of climate change into its international development programmes, including early warning systems to allow countries to prepare for extreme weather events.

Samoa, Tuvalu, Costa Rica and Denmark pledged to get 100% of their power from renewables while Sweden, Trinidad and Tobago, Ethiopia and Iceland pledged to go carbon neutral by 2050.

Observers said there was a different feeling to the announcements, too. Just as the march showed a more representative, inclusive and articulate climate movement than ever before, countries' and businesses' attitudes seem to have evolved.

There was widespread hope before the Copenhagen climate summit in 2009 that leaders would reach a global deal on limiting global emissions.

But sources say they felt that the needed grassroots support was lacking, while many countries still felt that they need not commit to sustainable growth. In the years since then, efforts have been ploughed into fostering much broader and deeper backing for change.

Science warnings

This may in part be because climate change no longer feels distant.

The chairman of the Intergovermental Panel on Climate Change, Rajendra Pachauri, told RTCC that the science is more definite than ever, giving negotiators far more information about the expected impacts of climate change.

In addition, the problem has become more immediate. "People are experiencing climate change right now" – from extreme weather events to rising sea levels, the impacts of climate change are "very much in evidence", he said.

Developing countries have announced they will break with the old high-carbon development path. Liberia has agreed to completely stop deforestation by 2020 in return for US$150 million in aid from Norway.

Liberia faces huge challenges – and limiting logging will hurt its economy in the short term, but in an emotional session its foreign minister Augustine Kpehe Ngafuan told RTCC that carbon payments would help ease the pressure and set the country on the path to

Photo: © Eino Sierpe.

sustainable growth. Meanwhile, Bangladesh – a country highly exposed to sea level rise – is leading the way in adapting to the effects of climate change.

Christian Aid's senior climate change advisor Mohamed Adow said the day marked a change in the political climate. "Here in New York we've seen a new crop of climate leaders, from rich and poor countries, help shift the world towards a resilient, low carbon future."

Wide coalition

While it was the UN secretary general's summit, the event wasn't immune to a bit of stardust. Leonardo DiCaprio made an appearance and Bianca Jagger was spotted wending her way to a private sector lunch, which author Naomi Klein also attended.

Klein expressed unease about the same economic messages that appear to hold that the change needed can be achieved without disrupting the status quo. She told RTCC: "There's a tendency to try to package action as non-threatening to business and I don't think that's helpful because the truth is we are going to have to get in the way of very large and powerful sectors of the economy and tell them they can't do what they're intending to do."

Yet others were wary of praising the level of effort in evidence at the summit. Climate Action Network director Wael Hmaidan said: "Leaders in New York, including US president Barack Obama, acknowledged they can no longer act against the will of the people. And on the weekend, the will of the people was made profoundly clear. Mums and dads, people of faith, progressive business leaders, union members and youth – all are already taking action in massive numbers, and they expect heads of government to join them and do more, now."

The Ban Ki-moon summit was a flawed event, held at a messy time in the history of action on climate change. The story of humanity's response to the challenge of climate change is still in flux. In many ways, the day was an exercise in affirmation - a day like many others in which initiatives are announced piecemeal to applause.

But even the most jaded campaigner couldn't help but feel excited that the "how" of tackling climate change is finally being discussed. Not just noble-sounding promises but real, messy, problems and solutions.

CLIMATE CONSENSUS: THE NIGHT SCIENTISTS AND SCEPTICS

SUSPENDED HOSTILITIES

Twitter adversaries meet over dinner to discuss the climate debate and why everyone hates each other so much.

By Sophie Yeo

Twelve scientists and sceptics have met privately to discuss how to suck the venom out of the climate change debate.

It was one of science's strangest social events to date.

Some of the best known names in the climate debate – including Mail on Sunday journalist David Rose, blogger Anthony Watts and Met Office scientist Richard Betts – shared salmon and civilities at a dinner party this year.

Hosted by the sceptical scientist Nicholas Lewis at his house in Bath in September, the group discussed their similarities, differences and how they might calm the debate that rages across the pathologically provocative medium of Twitter.

"Both sides are really fed up with the outrageous alarmists who are not representing science properly. Both don't like those who shout about it and call people names and take a polarised point of view," says David Whitehouse from the sceptic think-tank The Global Warming Policy Foundation.

The idea that there is some wiggle room when it comes to the facts of climate science is not always a popular one. The scientific consensus has already spelled out the catastrophic implications of delaying action on climate change, so fussing around uncertainties can be perceived as unhelpful.

Yet, when it comes to details, the scientists are as willing to admit it as the sceptics: the science is not settled – not fully – and the insults slung around online only hinder the process of rational scientific debate.

"When people say the science is settled, they mean there is such as thing as anthropogenic climate change. Where it's not settled is the rate of change, how much it's going to warm, how fast it'll warm under different levels of CO2 and exactly how it will affect different regions," says Ted Shepherd, a climate scientist at Reading University and Grantham Chair in Climate Science.

"It's not like climate scientists agree on everything by any means, so there's no reason sceptics can't come into that discussion."

Scientific differences

Often seen as bitter adversaries, the fact that such a group should be able to meet for civil conversation may seem remarkable.

The dinner was informal, but took place under Chatham House Rules, restricting how much information they could let leave the room. "Trust is precious - hard won, and easily lost," said Tamsin Edwards, a climate scientist at Bristol University who maintains her own blog.

Yet each participant to whom RTCC spoke stressed that the gulf between scientists and sceptics is not as wide as assumed – even on science.

"We found that we could all agree on many issues, but disagreed on several others," said Ed Hawkins, a climate scientist at Reading University.

Even the global warming 'pause' – the 16 year period during which temperatures have remained fairly stable – was spoken about calmly, says Whitehouse. "We talked about the pause and everybody accepted it was very interesting and needed more study."

A survey of the table at the end of the meal revealed that the views of scientists and sceptics on the level of "transient climate response" – or how much the world would warm should levels of pre-industrial CO2 be doubled – differed only by around 0.4C, recounts journalist David Rose.

"This is a difference which does not justify the fear and loathing and vitriol that's poured on so much of the debate," he said.

Shepherd agreed that the difference was fairly small – and said even the sceptics' lower estimates did not justify delaying action on climate change, as the current rate of emissions will still tip the world over the catastrophic warming threshold sooner or later.

"No matter what your view is, as long as you accept there is global warming, even if you take the best case scenario, you're still going to take action at some point. That's the sort of thing that was talked about a little bit."

Photo: © Kim Davies.

Communication

While the dinner may seem remarkable, what is even stranger is the fact that the debate has come to this in the first place.

These are not policymakers – and, if you take them at their word, neither the scientists nor the sceptics are politically motivated.

Dinnertime discussion did not centre on green taxes and solar subsidies, but data sets and temperature records.

"In science, where people just want to find out what's going on, there's a lot of name calling and bad press and bad faith by some people – but there's no political aspect in finding out what's going on," said Whitehouse.

The dinnertime was a communications exercise as much as a scientific one, providing an opportunity for the rivals to engage beyond the antagonistic Twittersphere.

"Communication isn't one way, it's two ways. You have to understand the audience and there's no doubt that climate sceptics are part of my audience. And they think I'm part of their audience," said the Met Office's Richard Betts, a keen Twitter user.

He added that one of the criticisms that could be launched at his decision to meet with the sceptics was that it could be seen as condoning the more extreme views that he says they "let be taken seriously" on their blogs.

"As a scientist, I'm not trying to build anyone's credibility. I'm just trying to discuss the science with all the stakeholders," he said.

Contribution?

For the sceptics, the motivation for the meeting centered on shifting the perception of them as "denialists" to proficient scientists who can contribute to the debate.

All wanted to lay to rest the idea that they don't believe in global warming – and are withering about those who promote this "loony" view. "I don't know anybody who doesn't agree that the world is warming and CO2 is a greenhouse gas," says Whitehouse.

Salmon, vegetables and some apparently very good chocolates were not enough to convert anyone to the other side, but participants unanimously declared the evening a valuable exercise.

Above all, said Rose, it allowed the twelve people in the room to realise that their adversaries were people, not "demons".

He said: "Just as it's useful for people like me to see that so-called sceptics are not big oil funded deniers, it can be quite useful for sceptics to see that not all climate scientists are in a sort of conspiracy to bankrupt advanced economies."

Will it change the tone of the debate? Everyone agreed that is an ongoing process.

Has it helped at all? The value of building a contact book when it comes to communicating climate science cannot be underestimated, they agree.

"It's built a few personal bridges," says Shepherd. "Now I have some contacts and if I did want to contact them because I didn't like something they wrote in the newspaper, I could call them up and say I don't agree that you're providing a balanced view."

Conference

The next stage would be a shared conference between sceptics and scientists, says Anthony Watts, who runs the blog Watts Up With That.

"We've been at odds so long, it is time to present science together," he says.

Sceptics, who generally work outside of academic institutions, are rarely accepted to present papers at scientific conferences – though almost all attendees at the dinner party, and many other sceptics, are scientifically trained.

The exclusion festers, with many of them reading it as evidence of "establishment" hostility to divergent views.

But Shepherd says he is open to the idea of sceptics participating at conferences, if they have something valuable to contribute.

That inclusion could knock down the dividing wall between the two camps, he added, and subject the work to equal scrutiny to mainstream scientific papers.

"If sceptics want to contribute, they have to engage with the scientific community in the normal route, which is though climate conferences, giving presentations, writing papers and sending them to peer-reviewed journals," he says.

The leap from a dinner table in Bath to the conference hall of the Royal Society may be difficult to scale – but don't be surprised if you notice a few surprising words of warmth exchanged on Twitter between these twelve unlikely companions in the future.

Postscript: *Since publication, there has been some disagreement among the guests on whether they ate salmon or beef at the dinner. We are awaiting reliable data records to resolve the controversy.*

BANKING ON PERU'S GREEN GROWTH

COFIDE is taking important firsts steps to become the most important financial and strategic agent for climate finance in Peru.

Corporación Financiera de Desarrollo S.A. - COFIDE S.A. is a mixed economy company, with administrative, economic and financing autonomy. The Peruvian State, represented by the National Fund for Financing of Public Sector Companies (FONAFE) of the Ministry of Economy and Finance, owns 98.7% of its capital, and Corporación Andina de Fomento (CAF) owns 1.3%.

COFIDE is part of the National Financing System and it can perform all those financial intermediation operations allowed by its legislation and by-laws and, in general, any other type of related operations. The openness of investors and their trust in COFIDE show the strength of our institution, as emphasized by the risk rating agencies Standard & Poor's and Fitch Ratings, which raised the long-term debt rating of COFIDE, both in local and foreign currency. Furthermore, locally, Equilibrium Clasificadora de Riesgo S.A. and Apoyo & Asociados Internacionales S.A.C. ratified the "A+" and "A" institutional rating awarded to COFIDE, respectively.

Since its creation and up to 1992, COFIDE operated as a commercial bank. However, from that time onwards, it only provided the services of a second-tier development bank, assigning the resources it administrated only through the institutions supervised by the Superintendence of Bank and Insurance and AFP (SBS). Second-tier banking operations allow COFIDE to complement the work of the private financial sector, channeling resources in such activities as short and long term financing and the export sector and micro and small businesses.
We share some country commitments assumed by Peru about reducing emissions. Our main contribution is in the energy sector as, through our main programs, products and services:

COFIGAS Program – INFOGAS was created by COFIDE to provide a group of services in order to promote rapid growth of the Natural Gas Vehicle - NGV market in Peru. In its capacity as a Development Bank and thanks to its close relations with the private sector and competent State Entities, COFIDE has developed this product that brings together the public interest of promoting a healthy and safe NGV market in Peru and the private interest of taking hold of business opportunities for the Natural Gas production, transportation and distribution market. This is also true for the services market related to providers of conversion equipment, conversion workshops, NGV fueling stations, conversion certification companies, and NGV transportation companies, among others.

COFIGAS Program – INFOGAS is a product intended to finance the conversion of vehicles to natural gas, including an automatic collection system for credit repayment at the time of refueling the vehicle with NGV, through the withholding of a percentage of the consumption value to be subsequently transferred to the financing organization for amortization of the loan. This system reduces operating costs and facilitates access to the loan in beneficial conditions for the owner of the vehicle, especially in the taxi owner segment. The main repayment guarantee of the loan is made up by the continuous flow of savings generated by the conversion (50 per cent compared with 90 octane

BIO NEGOCIOS de COFIDE

gasoline) and the automatic collection service provided with the product.

This Product has been developed based on Government contribution through the implementation of an appropriate regulatory framework, and private contribution, through capital and knowhow for the operation of the control and collection computing system. Based on these contributions, COFIDE adds its trustee experience as a Development Bank to use the regulatory framework and private experience to create the product COFIGAS - INFOGAS.

COFIDE has been able to provide access to banking services to over 90 thousand individuals thanks to the COFIGAS Program and INFOGAS System. Since they belonged to the informal sector of the Peruvian economy, they did not have access to financing before. This would not have been possible if COFIDE had not generated a financing network to consolidate the conversion of the Peruvian power matrix to natural gas. At the same time, this has promoted competition in the financial sector, both in services and financial rates for final users.

As of the end of May 2014, the number of converted vehicles and benefits generated from the onset of the program (2006) surpassed 181 thousand units and US$5.3 billion, respectively.

Through COFIGAS, COFIDE gives a greater number of potential users the opportunity of converting vehicles to NVG, as it finances those who have no possibility of paying cash up front for it. This is possible since the product developed by COFIDE funds and recovers automatically the money for the repayment, significantly reducing the financial risk.

Furthermore, this product also constitutes a service for financial entities interested in entering into new market segments previously not served, by contributing to the development of a product with lower risks and adequate margins. Thus, building upon the synergies COFIDE has identified between the public and private sectors, it has created a product

that allows for social inclusion and that is a decisive contribution to the consolidation of the NVG market in Peru and to the generation of monetary benefits for the population.

The results as of the end of May 2014:

- Generation of a market of 181,563 NVG vehicle users.
- Accumulated benefits amounting to US$5,310 million (approximately 1.8% of the GDP).
- More than 95,900 vehicle users have access to credit.
- More than 39,600 new vehicles converted to NVG, of over 15 renowned brands.
- More than 500 formal, national companies and 7,000 direct, sustainable employments

It should be noted that Peru made the commitment before the international community to accelerate the change of the power matrix. Peru assured the United Nations that in 2021 its economy as a whole would assign 40% participation to the use of cleaner energies, such as NGV.

Thus, thanks to the massive use of NGV, COFIGAS has a positive impact on improving Lima's air quality. For this reason, the Peruvian NGV Market Model has gained world recognition because of its quantitative results (reducing more than 2.5 million Tons of CO2e up to June 2014 and projecting to reduce more than 230 million Tons of CO2e up to 2030) but most of all, because of its qualitative results, which have allowed inclusive, formal, clean and transparent growth.

The economic development experienced by Peru has highlighted the need for new investments to meet an increasing demand, with more sustainable energy strategies based on the country's natural resources. According to the study conducted by the banking group Kreditanstalt für Wiederaufbau (KfW) "Feasibility study for a credit line for renewable energies and energy efficiency through COFIDE," it is estimated that the magnitude of the sustainable energy market for the 2009-2020 period is approximately US$6,800 million.

The program is aimed at both entrepreneurs with new projects and Small- and Medium-size enterprises (PyME) with projects related to Energy Efficiency (EE) and Renewable Energy (RE), whose undertakings require strategic strengthening to implement their business plans and achieve sustainability and profitability conditions; accordingly, the financing line contributes to establishing larger programs.

Program Structure:

1. Energy efficiency.
2. Production and distribution of renewable energies, business lines that are going through a high growth situation in the country owing to, among other factors, the increasing demand of domestic energy.
3. Social infrastructure that enhances quality of life.
4. Environmental transformation and preservation processes that are taking off and in the process of research or development of pilot programs, but which have great potential with respect to preservation of native and genetic resources of our natural heritage.

BIONEGOCIOS Program is sourced by own resources of COFIDE, resources from the Japanese International Cooperation Agency (JICA) through the Assistance Program for Energy Infrastructure Renewal (AIRE program), and KfW resources through the Renewable Energies and Energy Efficiency Program.

The AIRE program will provide the resources required (in addition to resources from other financial sources and own resources of COFIDE), so that COFIGAS and BIONEGOCIOS may continue supporting the development of projects for the energy matrix changeover, as well as to encourage the use of renewable energies and energy efficiency.

The AIRE program considers a loan for US$95 million and approximately US$5 million in technical assistance.

The Renewable Energies and Energy Efficiency Program of KfW offers the granting of an initial credit line of EUR25 million for institutional strengthening and the execution of the program. This credit line is in the process of being expanded up to EUR120 million. The program has EUR1.5 million for technical assistance.

COFIDE currently has a portfolio of financed infrastructure projects in the order of 5 billion dollars. Among the main projects we can list: Hydroelectric

Centrals like Chaglla and Cerro del Águila; Wind farms like Talara and Cupisnique; transmission lines, thermal power plants like Fenix Power Perú and Generadora Molloco, mini hydroelectric plants, among others. Furthermore, bonds issued by Eten S.A. have been purchased to finance part of the investment in the construction of a thermal power generation plant.

Up to June 2014, COFIDE's green portfolio surpasses more than US$ 700 million and have been placed mainly in infrastructure and energy projects related to environmental projects, such as hydroelectric power plants, wind power stations, combined cycle plants, sewage water treatment plants, among others.

Nowadays, COFIDE has a portfolio of potential projects with financial requirements around the amount of 5 billion dollars. Some of these projects have been entrusted to COFIDE to lead the financing structuring. Some of those projects are: Hydroelectric Centrals Molloco and Pucara; Mini hydroelectric Centrals Potrero, Electrozaña, 8 de Agosto, El Carmen and transmission lines like the one at Moyobamba - Iquitos.

It's important to mention that the trust activity of COFIDE continues its firm growth, reaching by june 2014, more than US$2,599.5 million in trusts administrated and trust commissions, an amount of US$186.3 million higher than the one recorded the previous year, explained mainly by the increase in the balance of the Fondo Mivivienda and Fondo de Inclusión Social Energético Trusts, the Cayaltí Trust and the Beca Servir Loans Fund.

In turn, with regard to the financial inclusion and rural banking penetration programs for adaptation, COFIDE continued expanding the scope of the Rural Entrepreneurial Development and Inclusion Program (PRIDER) with the establishment of new Loan and Savings Unions (UNICA for its acronym in Spanish) in new places around the country. Thus, the UNICA offices in Lambayeque, Incahuasi, Cajamarca and Ica were joined by 47 additional ones in Ayacucho and 40 in Piura, totaling 919 UNICAs operating and benefiting more than 13,000 families.

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BANCO AGROPECUARIO: THE GREEN AND ETHICAL BANK

Banco Agropecuario (AGROBANCO) was created to provide integral financial services in rural Peru.

It specializes in the financing of productive and business activities developed with or based on renewable natural resources: agriculture, cattle raising, forestry and aquaculture. Natural resources are considered renewable provided that their use is sustainable, with a positive balance of water and energy consumption and carbon emissions that generates positive externalities for other activities and human life and is useful for future generations.

It is a **Development Bank** focused on the investment in assets and expertise that improve the rational development of renewable natural resources so that these contribute to the nourishment and, together with other goods and services, the welfare of people.

It is a **Green Bank** promoting development activities that must not generate substantial environmental alterations, allowing nature to play its restorative role, that is, activities in harmony with the environment and environmental-friendly.

It is an **Ethical Bank** practicing what it preaches, promoting an efficient use of resources, encouraging business and a responsible behavior in everyone: rural producers, suppliers, traders, transformers, scientists, technical assistants, financiers and those in charge of developing and executing public policies. It is a bank committed to creativity and innovation to continuously improve production and post-production practices and make them sustainable.

With 12 years of existence, AGROBANCO is the bank with the most significant growth in recent years in Peru,

working in the agriculture and livestock sector, now a very dynamic one in the country that is taking giant steps towards productivity, diversification and quality.

One of four rural producers with access to credit from the financial system is a customer of AGROBANCO. Rural producers are in every corner of the country, faraway and remote places, cultivating, raising animals and protecting the country's biodiversity. AGROBANCO is a reliable bank with highly loyal customers and, as a result, a delinquency rate below the average in the banking system of a country priding itself on its strict financial regulation standards.

AGROBANCO is a bank with investment grade that is acknowledged as a responsible and reliable entity and is a good customer of other financial entities. It is a bank that inspires advanced financial products and services and promotes innovative ideas and concepts. It also promotes public-private partnerships to leverage synergies in structuring efficient financial solutions for the benefit of Peruvian agriculture. It is a partner for those producers with limited resources, and a fertile ground for the professional development of a new specialty, green and socially committed financiers of agricultural and forestry activities.

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Servicios Financieros para el Perú Rural

SAFE HOUSES FOR CLIMATE VULNERABLE

At World Vision Perú we are convinced of the courage shown by the most vulnerable families to develop their own survival strategies that have allowed them to make the most of their temporary poverty situation, and prioritize their children's lives and development.

An African proverb says that when two elephants fight against each other, it is the grass that suffers.

When the poorest families are forced to leave their homes, as a result of violence, or when the market plays and speculates with the price of food, and hinders any improvements on child nutrition, we are showing an aspect of this proverb.

Drawing the elephants' attention to this might help to keeping them from fighting, but it's not always the best option for the grass. There are other ways for the grass to be allowed to grow and blossom, in such a way that no elephant would ever think of trampling it.

Our strategies are reflected in our 'Viviendas Saludables' ('Healthy dwellings') project that aims at generating wellbeing for children and their families in the high Andean rural areas located over 3,500 metres above sea level.

There are seven principles that encourage the healthy dwelling project:

1. Making the most of a whole production system, instead of focusing on just one crop.
2. A shared vision that places the family at the center, with commitments to medium- and long-term vision that will lead to turning the changes they want to make into a reality.
3. The use of technologies that upgrade their ability to create value in the families, and input from private corporations to generate highly valued alliances without the generation of any models that would impoverish any of those involved.
4. The generation of income, by making the most of the competitive advantages; this implies the generation of a series of profitable businesses that utilize the local resources.
5. Environmental care, not as an end, but as the outcome of a better understanding of the meaning of sustainable development.
6. Experiences that can be replicated in the area, as they show visible changes that are economically, socially, and culturally viable, with the families themselves as the main role players.
7. A generation of strategic alliances with other partners, from the Government that views warmer and more spacious dwellings that are suitable for better childcare as an option for disease prevention or child development promotion, to corporations that could develop sustainable corporate social responsibility programs.

This project, in the Llallapara community alone, in Cusco, increased monthly income levels from S/. 20.00 to S/. 350.00. At the same time severe respiratory disease rates decreased from 20.8% to 2.9%, as a result of physical house improvements and the establishment of suitable spaces for children. At present, 300 families have made their life project a reality.

World Vision Perú is a Christian organization that is focused on protecting and developing child potential that will lead to children to live life to its fullest. At present, we work in 526 communities, and serve over 94,000 children and their families, and we are looking for partners that help us to multiply the Healthful Dwellings proposal in areas where the conditions for this to become a reality have already been generated.

World Vision Perú
www.visionmundial.org.pe

World Vision

PETROAMAZONAS EP

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un nuevo modelo de desarrollo energético

CREATING SUSTAINABILITY IN A NON RENEWABLE ENERGY ENVIRONMENT

Volumes of flared gas to be reduced / utilized:	Estimated CO_2 emission reductions:	Sustainable Energy for All	Overall investment costs:
50 mmscfpd	Up to 800,000 tons	192 Communities	>USD 1,200,000
↓	↓	↑	↑

Invested up to July 2014 ~ USD 500,000,000


Power Plant (Associated Gas), 9 MW, Central Processing Facility (CPF) Block 15

PACIFIC RUBIALES: A RESPONSIBLE OIL AND GAS COMPANY

Pacific believes there is a way of continuing to supply the oil & gas necessary to energize the world through innovative and responsible practices.

By Martin Castro Cerón - Corporate HSEQ Manager Pacific Rubiales Energy

Developing countries have a responsibility to ensure fast growth, together with tougher legal and environmental standards to protect nature and their populations.

This is a key concern for Pacific Rubiales Energy, a Canadian petroleum exploration and production company in the business of heavy crude oil and natural gas.

We are the first company in the world to have its Rubiales and Quifa fields certified under the EO100 standard.

At Pacific Rubiales, we have taken up initiatives to reduce greenhouse emissions and implement cleaner technologies within our fields to guarantee a reduced footprint within our production.

Furthermore we have generated alternative business opportunities such as liquefied natural gas (LGN) projects, diversifying to cleaner fuels that improve efficiency and reduce emissions.

We have also set ourselves to identify and control impacts to the hydric resource within our main fields of operations and their proximities. These initiatives provide some of the most powerful shared value examples in the extractive sector.

Today's global challenges indicate that business continuity will be guaranteed by a responsible environmental performance, by a conscience of the future, and those opportunities of development that we can create for the communities near our operations.

For our company, designing sustainable projects means being able to generate impact and influence that lasts longer than the resources we produce, it means leaving a legacy to be remembered by.

A positive legacy includes the empowerment of people. This is why we have set out to promote respect for the inherent human rights of the communities in our areas of operation.

This includes protecting their right to access clean water sources and to breathe clean air by setting up measured to monitor and control air quality as well as guarantee water availability and access.

We understand that our business cannot go against the inherent rights of communities to live in a healthy and prosperous environment. Nor can it go against the traditional use and value that different communities have for their resources.

On the contrary, we understand we are called to be a main source of wellbeing for communities in all of our influence areas.

Our contribution

In its Rubiales Field in the Llanos Basin in Eastern Colombia, Pacific has a production of approximately 9-13 barrels of water for every barrel of oil extracted, a number that is expected to increase to 23 due to the characteristics of the sites we operate in.

This is further magnified through the increasing daily oil production, which implies close 3,000,000 barrels of water per day, with the potential to continue rising.

To dispose of this byproduct responsibly, we use a series of water disposal mechanisms authorized by the Colombian environmental authorities; among them, a water re-injection process in certified with the ISO 50001 seal for energy efficiency.

Nevertheless, this still requires high levels of energy to exert the pressure of returning the water to the source without affecting superficial water sources. Due to the lack of infrastructure in Colombia, we had to rely heavily on burning fossil fuels to generate energy within its fields.

Because burning oil to generate electricity, was contributing highly to the share of emissions the company was producing, it re-evaluated its strategy and invested in building the Petroelectrica de los Llanos (PEL) power line that would connect the Rubiales field to an existing one and supply company demand.

The energy provided by the PEL power line, comes from a national system and is generated by hydroelectric centrals that generate fewer carbon emissions, compared to other sources of energy.

This solution allowed the company to transfer to a new form of generating electricity, ceasing to burn thousands of barrels of fuel a day, thereby reducing CO2 by 180,000 tons a year and 12% of its current GHG emissions.

Water focus

Committed to optimizing its water reinjection process even more, we designed a water recycling initiative that was recently authorized by the Colombian environmental agency.

Through this pilot Pacific proved it could turn a daunting concern like water abundance and high electrical consumption in its Rubiales field, into a vast market opportunity.

Through this water recycling model we will set out to treat close to 1,000,000 of our residual water and make it available, free of charge, for local agricultural development.

This water complies with the necessary normative and will be used for industrial agriculture, rather than human or animal consumption. Furthermore, the water will be directed mainly at biofuel crops, so as to contribute to the promotion of alternative sources of energy.

The program, more than solving only our internal challenge, targets one of the challenges faced by Colombia which is related to water stress due to incremental usage. In 2008, it was estimated that the agricultural sector consumed over 19.389 million cubic meters of water.

The projection for 2019 is that this particular industry's consumption will double, which is why regional players seek to dis-incentivize its growth.

Our company's operations in Meta, Colombia will contribute significantly to reduce some of this water stress, thereby contributing to catapult the agricultural industry and opening a new possibility for the regions development.

We are convinced our company will leave a permanent legacy in the region.

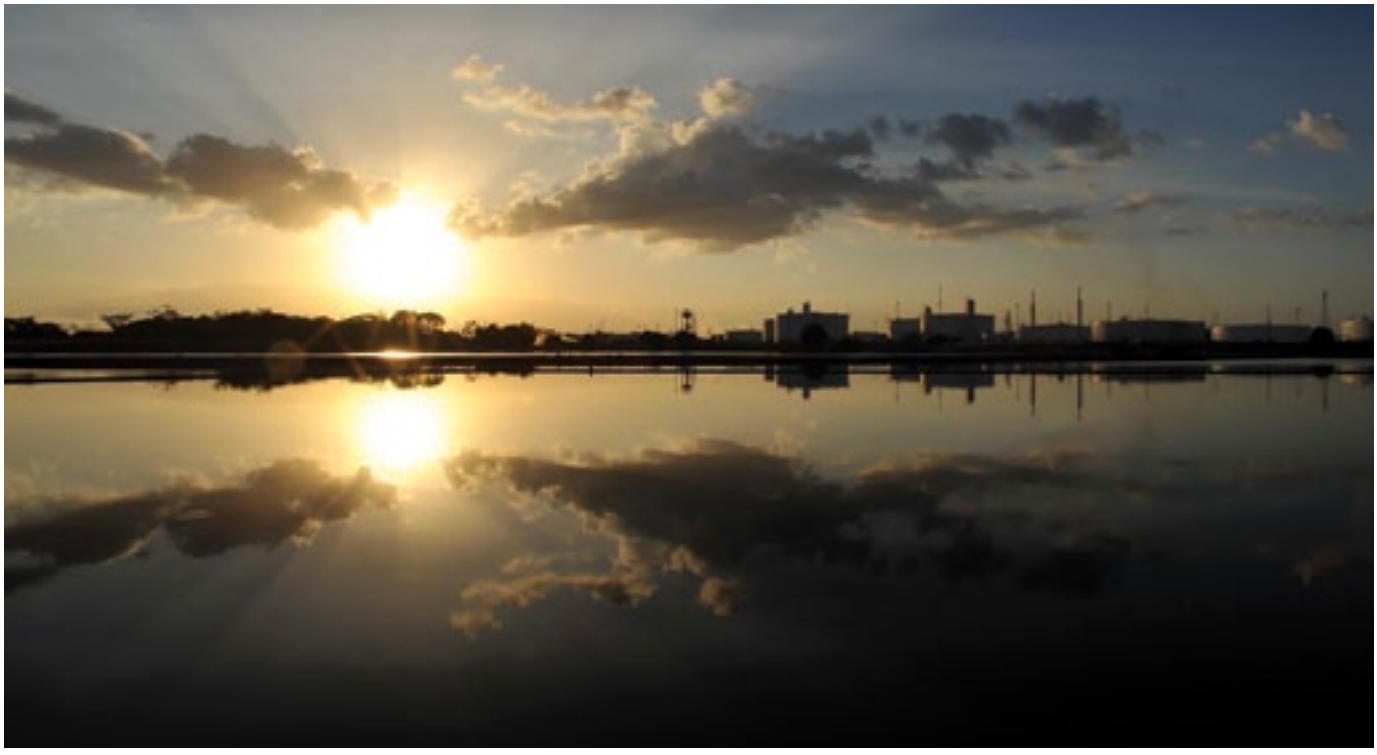
By promoting the last agricultural frontier of the country and leaving infrastructure such as an innovative power line, that can be capitalized by local governments and expanded to other regions, Pacific is helping create alternative economies that can fill the void of the local finances when the nonrenewable resources terminate.

More so, it is guaranteeing a steady pace of rural development that will have an impact on the country as a whole. This is what we call sharing our value.

Pacific Rubiales Energy
www.pacificrubiales.com

PACIFIC
Rubiales Energy

1. The National Policy for Integrated Water Resource Management in Colombia provides a sustainable water strategy and the implementation of processes and technologies that will allow the efficient use of this resource. There is an ongoing bill that will determine the viability of utilizing this water for agriculture, fishing, mariculture and aquaculture, recreational, wildlife preservation and industrial use. In this sense, our water recycling project aims to improve the availability of water resources, by providing a resource that was once considered a waste to be used in other productive activities, using technologies that encourage the treatment of produced water for subsequent reuse in the agricultural sector, a strategy that generates environmental, social and economic value.



AFRICA'S CHALLENGE: SUSTAINABLE ENERGY FOR ALL

Jeunes Volontaires pour l'Environnement est une organisation non gouvernementale dont le principal secteur d'intervention est l'environnement et qui œuvre pour le développement durable en Afrique à travers 25 pays dont le siège international est basé à Lomé au Togo.

L'énergie est l'un des facteurs clé du développement à travers la production, le transport, la consommation. L'énergie est donc le moteur de développement. Dans les pays en développement et plus précisément en Afrique, l'accès à cette ressource source est inégalement reparti.

En Afrique subsaharienne, les statistiques prouvent que plus de 70% des besoins en énergie des populations sont comblés par la biomasse, des ressources forestières. Près de 40% de ces populations sont en dessous du seuil de pauvreté.

Les populations pauvres restent fortement sous la dépendance des combustibles traditionnels. En effet, 40% de l'énergie d'un foyer africain provient du bois de feu1occasionnant du coup la disparition et la dégradation des forêts.

L'énergie est un élément essentiel du développement social et économique de toute communauté puisqu'elle est utilisée pour répondre à des besoins de vie et d'activités.

Le secteur de l'énergie au Togo comprend la biomasse-énergie, l'électricité, les hydrocarbures et les énergies renouvelables. Il représente 80% pour les énergies traditionnelles contre 16% pour les énergies modernes et 4% pour l'électricité (DCN, 2010).

En effet selon l'étude de la deuxième Communication Nationale sur les changements Climatiques la DCN, 64% des ménages utilisent le bois de chauffe. Ce combustible est utilisé surtout en milieu rural (76,4%) et faiblement en milieu urbain (14,3%) où plus de 80% des ménages utilisent le charbon de bois pour satisfaire leurs besoins en énergie domestique contre 17% en milieu rural.

Par ailleurs, si l'électricité, le gaz et le pétrole sont utilisé à concurrence de 4% en milieu urbain, à peine 0,2% des ménages ruraux connaissent ces formes d'énergie. En revanche, plus de 6% des ruraux se servent des résidus agricoles et énergies renouvelables (solaire, biogaz).

- Comment aider les communautés à avoir accès à l'énergie moderne et à vaincre la pauvreté énergétique?
- Comment aider les communautés à mieux gérer la biomasse?

JVE à travers son programme CLENA qui se développement dan 25 pays d'Afrique mobilise des jeunes autours des alternatives durables pour corriger cette inégalité criard qu'il y a au niveau de l'accès aux services énergétiques dans les milieux rurales du continent.

Le programme CLENA fait la promotion des énergies propres à travers la vulgarisation des équipements énergétiques solaires (lampes et cuiseurs) la bio énergie à travers le biogaz. Dans le programme Clean Energy for Africa, il est aussi question de faire et de promouvoir l'efficacité énergétique à travers les foyers améliorée, la gestion durable de la biomasse à travers la vulgarisation de la meule casamançaise et des activités de reboisement et de gestion communautaire des forêts.

La lutte contre l'émission des GES et aussi la pollution de l'air intérieur est aussi un aspect clé de ce grand programme à travers la vulgarisation des foyers améliorés du type népalais. Au-delà de l'aspect pratique sur le terrain, il y a un volet plaidoyer sur les politiques énergétiques national en plus de la recherche action sur la situation énergétique de chaque pays participant au programme CLENA. Le programme CLENA avec l'appui financier de NORAD, de NNV couvre une période de 5ans allant de 2012-2016. Depuis 2012, des actions concrètes à travers la vulgarisation de ces alternatives sus mentionnées, action de plaidoyer sur les politiques énergétiques, la promotion l'Agenda 21, la planification énergétique durable, la carbonisation améliorée, la vulgarisation des kits de recharge solaires comme outil permettant aux communautés d'avoir accès à l'énergie.

Des actions sur la REDD+, la vulgarisation des foyers pour la gestion durable des forêts pour permettre aux communautés de créer de l'emploi et de construire leur propre résilience et de s'adapter aux changements climatiques, de gérer efficacement les et de faire des projections à long terme et de se prendre en charge.

Dans ce programme, JVE a réalisé des études de situation énergétique au Benin, Niger, Cote d'Ivoire, Gambie, Ghana. A travers les membres ont participé à des r a eu à participer aux grandes conférence sur l'énergie et le climat, COP18 et 19, Conférence des ministres Africain de l'environnement. Les conférences de la CEDEAO organisé par ECREEE sur l'énergie.

Les pays impliqués dans la réalisation de ce projet sont: Benin, Cote D'Ivoire, Ghana, Niger, RDC, Gambie, Cameroun, Burundi, Tanzanie, Nigeria, Rwanda, Kenya, Zambie, Senegal, République Centrafricaine (RCA) and Togo.

By Séverin Koffi Apedjagbo, JVE's Clean Energy for Africa Program Coordinator

Jeunes Volontaires pour l'Environnement
www.jve-international.org
0022822200112, BP 8823, Lomé Togo

PACIFIC RUBIALES IS AN INDEPENDENT OIL AND GAS COMPANY, RENOWNED FOR ITS EXTENSIVE WORK AND INNOVATION IN ENVIRONMENTAL CONSERVATION.

At Pacific we have an environmental strategy that allows us to transcend and leave a positive legacy within our areas of operation. During 2013 we strived to achieve higher energy efficiency and advanced in our water reuse iniciative.

Pacific
Rubiales Energy

SEWAGE MINING – INCREASING THE RECYCLING CYCLE

Approximately 66% of the world's population's (4.5 billion) wastewater is being collected and treated. The growing environmental awareness is encouraging governments to set ambitious goals to ensure everyone is connected to decent wastewater treatment, as well as prevent GHG emissions and global warming.

Wastewater treatment process causes huge quantities of direct and indirect greenhouse gas emissions. Worldwide wastewater is the 5th largest source of methane emissions and 6th largest contributor to nitrous oxide emissions.

Reducing these emissions from the treatment process and the contribution of the wastewater treatment processes to global warming is a major concern.

Problem

Direct emissions are generated by each process of cleaning, storage, thickening, anaerobic digestion, composting, land spreading, incineration, incineration with household wastes, landfilling.

Indirect emissions are due to transport emissions (for consumables, sludge and ashes), civil engineering emissions, as well as from import of electricity, steam or gas.

The environmental cleaning up of water in Wastewater Treatment Plants (WWTPs) produces sludge that also needs to be treated. Wastewater sludge treatment is an environmental problem, as contaminants in water may land up in the sludge.

Sewage sludge treatment and disposal can constitute up to 40% of total emissions associated with wastewater treatment.

Recent regulations regarding quality of treated wastewater effluent leads to an increase production of sludge which is eliminated in four main disposal routes: land spreading (directly or after composting), incineration, incineration with household wastes and landfilling.

Solution

Applied CleanTech (ACT) has developed a revolutionary Sewage Recycling System (SRS) technology that presents cost-effective options to reduce emissions through improved plant operations. The SRS extracts suspended solids from wastewater before they become sludge. The sewage mining outcome, Recyllose™, is a cellulose-based substance automatically produced by the SRS, converted and packed into pellets on-site.

It is a recoverable, valuable resource that is used in the plastics, insulation and construction industries; as an energy-efficient bio-fuel or as pulp & paper additive. Recyllose™ reduces the use of fossil fuels and timbered trees, thus reduces GHG emissions.

The SRS increases WWTP capacity by up to 30%, reduces sludge formation by up to 50% and reduces operating costs & energy consumption by up to 30%. Less sludge means less incineration, fewer landfills, and reduced surface and ground water pollution. With less sludge, there is less energy consumption.

Success stories

ACT's SRS system was installed in Aarle-Rixtel WWTP in the Netherlands for a trial period of 3 months of working 24/7 on partial flow since April 2014.

The WWTP is working beyond full capacity of 272,000 people. The SRS overall effects to the WWTP were: 10-15% Increase in WWTP capacity, 30% overall reduction of WWTP operating costs, carbon credit eligibility and reduced pollution.

The Dutch waterboard also successfully tested the Recyllose™ for various uses, officially recognizing its great commercial potential as a raw material that is suitable for use in numerous industries. This pilot is an official recognition in the innovation and in the importance of the SRS technology for wastewater treatment plants. As a result, the water boards have decided to fully embrace the SRS technology.

In 2013, 2.5 billion people around the world did not have access to adequate sanitation. In addition, the need for better sanitation in rapidly growing cities (wastewater collection, treatment and sludge management) are the forgotten necessities of urban life. Treating all this additional wastewater means a higher carbon footprint. Overall, capital expenditure on wastewater is growing by 5% per year.

The SRS technology of recycling wastewater solids presents dramatic reduction in the WWTP's carbon footprint, while increasing the wastewater connections.

www.vert-energy.com
www.appliedcleantech.com

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Applied CleanTech

IS IT POSSIBLE

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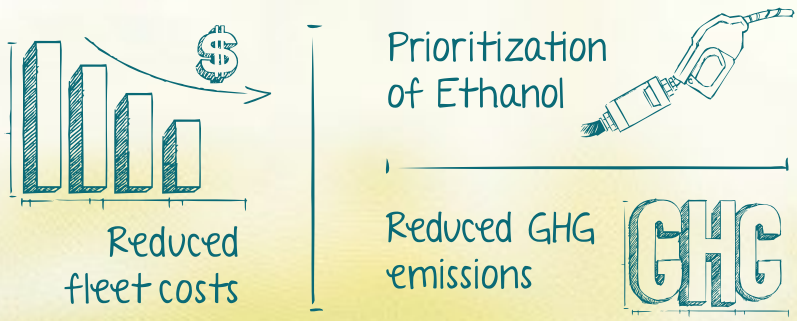
Ecofrotas is leader in Fuel and Maintenance Management Services in Brazil, with over 13.500 clients and 750.000 vehicles under management. Our solutions seek to ensure the best results for our clients, helping reduce costs and greenhouse gas emissions. And all because we believe it's possible to grow without causing environmental impact.

After all, when we do good, it always ends up coming back.



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LABKOTEC OY: PROTECTING WIND TURBINES FROM ICE

Labkotec Oy has introduced a new generation ice detector, the LID-3300IP for use in wind turbine applications.

The detector is especially designed for wind turbines operating in extremely harsh weather conditions. Effective ice detection contributes to increased safety and reduced maintenance through unplanned stops.

Icy weather conditions impede wind turbine service reliability, as ice easily forms on the rotor blades. The phenomenon is especially familiar in northern coastal regions.

Ice reduces the productive capacity of wind turbines considerably and burdens their construction, which leads to an increased need for maintenance. In addition, ice falling off of rotor blades can cause damage to buildings and people near the wind turbines.

The LID-3300IP ice detector has been developed to support improved wind turbine reliability and enhance safety close to structures.

Safe area

If the height of a wind turbine is 130 metres and the length of its rotor blades is 80 metres, the wind turbine should be surrounded by a safe area of at least 315 metres.

This is not always possible in densely populated areas. Security risks and strain caused by ice formation can be significantly reduced by equipping wind turbines with Ice Detectors.

Efficient detector

Labkotec Ltd has introduced a new LID-3300IP Ice Detector. The Detector is especially designed for wind turbines in arctic conditions.

Most wind turbines are located in the coastal regions. The last winter brought arctic-like weather conditions with its icy winds, heavy frost and rapid temperature changes to the south of Finland, so the need for efficient ice detection is evident.

Older turbines

The new ultrasound-based LID-3300IP Ice Detector offers many considerable advantages:

- The equipment is compact and easy to install.
- It is ready to use without calibration and fits all turbines from different manufacturers, including older models.
- The LID-3300IP is easy to connect to wind turbine control systems using a relay, current data, serial or TCP/IP interface. Congealment status, alarms and parameters can be monitored and adjusted through an inbuilt www user interface.

Market leader

Labkotec's LID-3300IP Ice Detector improves turbine production reliability and radically reduces risks caused by ice formation in arctic conditions.

LID, tested by the Technical Research Centre of Finland (VTT), is the leader in the market.

Almost 4000 units have already been supplied to the biggest turbine manufacturers in Europe and in Finland they are used, for example, by Finavia to ensure aviation safety.

Labkotec Oy

Labkotec Oy is a leading Finnish manufacturer and supplier of electronic measuring technology. Labkotec's expertise is regularly relied upon by both industrial enterprises and municipal utility companies.

Labkotec
www.labkotec.com

Labkotec
INDUTRADE GROUP

Efficient ice detection brings reliability and safety

Harnessing power from the wind is a clean and sustainable way to generate electricity as it produces no toxic pollution or global warming emissions. However, icy weather conditions impede wind turbine operation, as ice easily forms on the rotor blades. Labkotec's LID-3300IP Ice Detector improves turbine production reliability and radically reduces risks caused by ice formation.

For onshore and offshore applications.

Labkotec LID-3300IP Ice Detector is the market leader. Over 3000 units have already been supplied to turbine manufacturers.

Measure your success

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ISLAND DREAMS: DIVERSIFYING TO SURVIVE

Trinidad and Tobago is looking beyond oil and gas, and investing in wind and solar energy sources to ensure a cleaner and more stable future.

Towering above the breezy Gasparillo hillside in the south of Trinidad, a white wind turbine quietly whirs. The windmill, once symbolic of child's play, now stands as a physical icon of our energy future. This turbine works to generate power for the Islamic Children's Orphanage.

This initiative – the installation of a wind turbine and solar photovoltaic panels tied into the national electricity grid – serves as a commitment of the Ministry of Energy and Energy Affairs and Powergen, to impact the future of our energy landscape – the introduction and integration of renewable energy sources.

Renewable energy continues to incrementally make its presence felt across our land. In March 2014 external security lighting fully powered by solar photovoltaic panels was provided to 15 community centres. By using renewable technologies instead of traditional electrical lighting, these community centres will reduce their electricity bills substantially.

Long boosted by its thriving oil and gas economy, Trinidad and Tobago has joined its neighbours in diversifying the energy mix for the benefits of all citizens across various spheres of life. Thousands of school children in some 21 schools can now read by solar lighting in their libraries and use solar-powered water distillers in their laboratories.

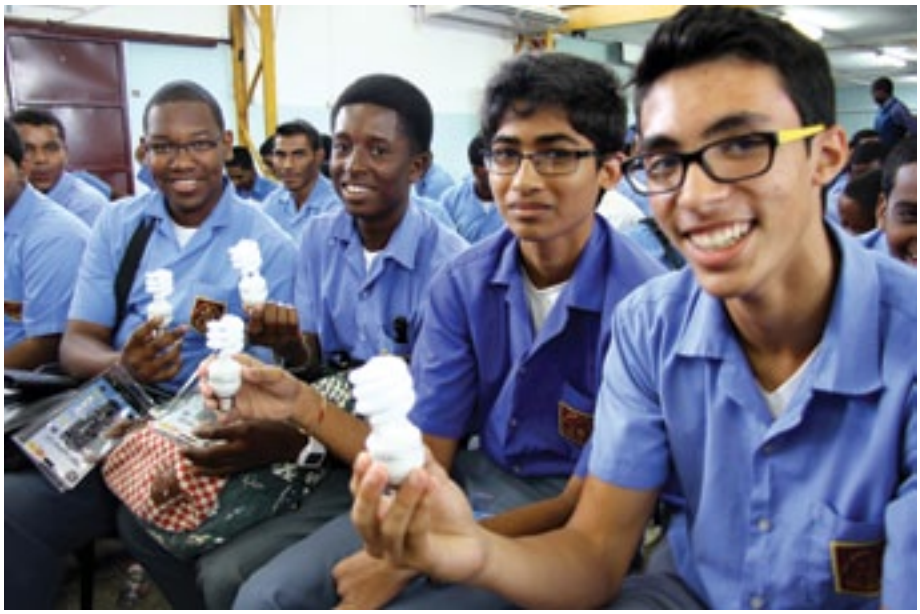
Motorists drive more safely along the highways knowing that the police surveillance bays are constantly powered by renewable energy. Recreation has also taken on a new dimension with the brightly solar PV-lit seafront boardwalks.

Through unilateral funding by the Government these projects will be repeated in 2015. To harness our own substantial wind power, an assessment study is currently being conducted for the deployment of a wind farm, possibly along the east coast of Trinidad, for generation of up to 100 MW of power.

To further drive and empower these initiatives, Trinidad and Tobago has partnered with the United States Department of Energy for the establishment of a Caribbean Renewable Energy Research Centre. This comes out of discussions held during the visit of US Vice President Joe Biden in May 2013 with Prime Minister Kamla Persad-Bissessar.

Already, several incentives have been offered to citizens to encourage the adoption of renewable energy technologies. Soon, extensive energy audits will assess how efficiently energy is being used in a plant or manufacturing site and make recommendations for energy-saving interventions.

In order to prepare our population to accept and utilise renewable energy, it was essential that



Energy Caravan - Hillview College - Students display energy efficient CFL bulbs.
Photo: © Ministry of Energy & Energy Affairs.

Light Bulb Exchange - Barataria - Minister of Energy & Energy Affairs explains 10 tips on saving energy to children. Photo: © Ministry of Energy & Energy Affairs.

any informational thrust should also be accompanied by education on our traditional energy sources, oil and gas, and the need to conserve and efficiently use these finite resources.

Our "National Energy Communication Campaign" is aimed to raise public awareness about the importance of the energy sector in our everyday lives. In the current second phase, Energy Efficiency and Conservation is being highlighted and in the third, renewable sources of energy will be explored. Both the campaign and the website, www.myenergytt.com, claimed top honors and won "Best Interactive Website" in the recent Latin American and Caribbean Advertising Federation's ADDY Awards.

The Light bulb Exchange Initiative has also proven its worth on the international stage by winning the Petroleum Economist's Award for Cleaner Energy Initiative 2014.

The 2014 Omnibus Survey for the question of 'Who Bought Energy Efficient Light Bulbs?" showed that there was up to a 25% increase compared to the previous year under the 'Location' and 'Age' categories. This indicates that the outreach and awareness has a positive impact on enabling people to change their behavior and approach to being more energy aware and efficient.

The hugely successful pilot Lightbulb Exchange Initiative by the Ministry of Energy and Energy Affairs encouraged the Cabinet to slash import duties on CFLs in 2014. The Ministry and its state companies have started diversifying its fleet of vehicles into hybrids and CNG powered vehicles. Hybrid and electric vehicles are now tax exempt as of 2015.

The United Nations Environmental Programme (UNEP) working on a communication campaign in the context of "Sustainable Energy for All; We Have the Power: Efficient, Renewable, Affordable" selected Trinidad and Tobago, as the only island in the world for this project. The UNEP believes that "Although Trinidad and Tobago is a gas exporter, T&T has taken a number of recent decisions on clean energy which demonstrate vision and political ambition." Future plans include increased energy efficiency in the large industrial sector by way of generous incentives, studies into the feasibility of a Waste to Energy facility to combat the issue of solid waste disposal and the doubling of the number of community centres and schools that will be outfitted with renewable energy technologies. T&T recognizes that the way for rapid development of renewable energy technologies into the national grid is through Feed-In-Tariffs. A multi-agency taskforce has been mandated by Cabinet to provide recommendations, implementation of the legislative amendments and technical adaptations by January 2015.

As the leader in oil, gas and energy in the Caribbean, Trinidad and Tobago is well poised to lead the region in Renewable Energy as well. Climate Change mitigation and adaptation is one of our foremost priorities and diversification away from fossil fuels toward solar PV and wind energy and increased energy efficiency is paramount to our own survival. Renewable Energy is ready for Trinidad and Tobago and Trinidad and Tobago is ready for Renewable Energy.

Trinidad and Tobago
www.energy.gov.tt
www.myenergytt.com

Government of the Republic of Trinidad and Tobago
Ministry of Energy and Energy Affairs

MINISTRY OF ENERGY AND ENERGY AFFAIRS
POWER. PROSPERITY. PROGRESS.

MEXICO SOLAR'S SHINING LIGHT

Six years ago, with the goal of developing a sustainable business, Granite Chief Solar decided to focus on a technology that would impact the largest number of people possible.

We chose solar energy, for domestic and industrial use, we want to present this technology to the community and show the impact that this can have on their daily lives, by saving money and taking care of the environment conservation.

We have placed systems in educational, industrial and residential segments, as well as donated solar systems in educational institutions and research centers to promote the study and attract interest to research, investigate and develop this technology to the contribution of society.

Granite Chief Solar (GCS) sees the development of our projects as a learning experience, and it is always standing next to the consumer, supporting from first contact to know their needs, budget presentation, execution and commissioning, as well as monitoring the system's lifetime as a post–sale service.

We also help the client with the paperwork and connection of the system with CFE (Comisión Federal de Electricidad) and with other government instances to comply with the regulations.

Our Company owns the only private solar farm with CPV (Photovoltaic Concentration) technology in self-supply mode, operating in the country with an installed capacity of 1 MW.

GCS is developing a new and more ambitious challenge, a Greenfield project, starting since the conception of the idea, defining objectives and goals, determining the geographical location, and the generation capabilities according to the availability of the solar resource.

We developed tools to

Granite Chief Solar is a Mexico-based solar energy company. Follow it on twitter @GraniteChiefSol

make this process accurate and timely, researching and providing the information about different technologies to be able to integrate on the project finance.

This allows us to offer to the market and our customer's integrated solutions in energy, sustainability, optimization and efficiency.

Good management of this project will provide our customers the best balance between optimization and energy consumption reduction as well as the best cost per kWh from renewable sources.

Granite Chief Solar
http://granitechiefmexico.com/

GRANITECHIEF SOLAR

DRIVING SUSTAINABILITY IN THE AUTO INDUSTRY

Nobuaki Katoh, President and CEO, DENSO Corporation explains why he wants the company to become one that can make even greater contributions to society.

The DENSO Group has formulated guidelines and visions at each stage of management and has continued to achieve growth while responding to changes in the business environment. With DENSO VISION 2015 serving as our guideline, since 2004 we have addressed various business and corporate social responsibility (CSR) issues. In my own mind, however, the question of "what DENSO must do to ensure it remains a company essential to society in the future" is one theme that has gradually become increasingly important.

Each and every DENSO associate, myself included, wishes to see DENSO become a company that plays a leading role in helping to solve a variety of issues in society as well as a trustworthy company in harmony with people in local communities.

To become such a company, we must focus closely on long-term social changes, create our ideal images of society and the Company, clarify issues that need to be solved and boldly take on new challenges toward attaining our targets. For these reasons, I have asked associates in each region of the world to consider various issues and the Goal of the DENSO Group in 2020 based on the expected social changes in the future.

In the near future, the global population is projected to reach 8 billion, while the amount of CO2 emissions resulting from

> We aim to become a global company with high aspirations to contribute to the world and be trusted by people

Nobuaki Katoh, President and CEO, DENSO Corporation

human activities is expected to increase to 3.5 times (2.5 times in 2011) the planet's absorption capabilities. Additionally, in today's automotive society, the number of cars owned has climbed to 1.5 billion (1.5 times the number in 2010). At this rate, the number of traffic accidents will also rise and two million people are expected to lose their lives each year.

I believe that a sustainable society capable of solving issues such as these is a society that does not push the planet to the brink and where people can live enriched lives. In working to achieve this, we have created our image of an ideal society in 2020 that envisions "Preserve the planet" and "Security and Safety."

The DENSO Group has declared that we will take our utmost efforts in environmental fields to reduce environmental impacts on society as a whole by focusing on fuel efficiency, CO2 reductions and energy saving, energy creation and energy storage technologies.

In the future, every associate in the DENSO Group will take to heart our slogan of "Protecting lives, Preserving the planet, and Preparing a bright future for generations to come" and directly tackle a host of issues facing society while actively being involved in finding solutions.

DENSO
www.globaldenso.com/en

DENSO

AVIANCA: PILOTING SUSTAINABLE GROWTH

Latin American leading airline and Star Alliance member outlines its plans to make flying more environmentally friendly.

Each year the companies in Avianca Holdings SA improve and launch a number of initiatives to control the environmental aspects derived from the aviation operation and other transverse processes.

In order to do this, Avianca focuses on a cleaner operation, executed within a framework of legal, technical and sectorial regulations, among these, the IATA environmental policy.

These guidelines conduct the strategies to enhance the environmental performance and aviation operation sustainability of the airline, through the implementation of new technologies and the correct operational processes, the improvement of the airport's infrastructure and several economic instruments.

These efforts aim at achieving a gradual and progressive reduction of the most important environmental impact in the industry: the GEI emissions and the damage to the atmosphere.

The company has developed a series of plans to modify processes that aid the airline's sustainability goals and improve its environmental performance.

It engages the different areas participating in the operation, working on their receptivity to change, the search for cutting-edge technology and the assignment of economic resources in favor of this environmentally friendly transformation. Among these plans, the company has joined the industry's goal of achieving carbon neutral growth as of 2020.

As lead strategy, the airline has renovated and streamlined its fleet, integrating eco-friendly technologies, such as Sharklets and satellite navigation systems.

These have progressively lowered fuel consumption and noise levels, generating sustainability on three pillars:

economic, due to lower operational costs associated to fuel purchases; environmental, for a reduction in greenhouse effect gas emissions, and social, through the decrease in noise pollution caused by aircraft operations that affect communities near airports.

The reconfiguration of the Airbus A330 fleet was a complementary action that helped reduce the overall aircraft weight, making them more efficient. As a result of the favorable changes in the company's fleet, plus the arrival of the first of 15 new Boeing 787 Dreamliner, expected in the coming months, a greater environmental efficiency is foreseen by the end of 2014.

During 2013, these strategies led to a decrease in monthly average of CO2 emissions from 1.56% per 100 passengers per kilometer, compared to the monthly average in 2012 in Avianca's COA*, even when the number of passengers carried by the airlines within the Holding rises each year.

Complementing the technical improvements, the airline has started different initiatives, related to the operational procedures in order to achieve a cleaner flight. Among these are:

- Reduced weight of the fleet, achieved through increased control and monitoring of the fuel supply, following the established guidelines in the tanking order and the amount of potable water according to flight distance.
- Initiatives aimed to achieve greener take-offs and landings, by adjusting the configuration in the use of the flaps and the correct engine power, under specific conditions.
- Optimization in the use of the aircraft's own electrical supply on ground. For example, the aircraft taxiing in the landing strip using a single engine.

The company has also incorporated environmentally friendly initiatives to transverse processes that support the company's operation, such as maintenance, ground support, administrative processes and third party services.

It has invested in the renewal of its ground support equipment, in order to guarantee greener technology.

For example, ladders operated through solar panels, the substitution of fuel-based systems for electrical-based systems on ground operations, with cutting-edge technology engines and preventive maintenance and monitoring programs, in order to prevent environmental damage.

In 2013, the monthly average emission of C02 of ground operations in Bogota's HUB was reduced in 2.65% per worked hour, compared to the monthly average in 2012.

Other initiatives include investment in water efficiency equipment for maintenance areas; environmental supervision in processes involving the external supply chain in order to ensure the sustainable use of resources and materials; new equipment that increases capacity in emergency response and possible environmental impacts.

Also, the company continues to improve and strengthen previously established programs for the disposal of conventional and hazardous materials.

The various actions implemented by the airline, both on ground and in flight, are aimed at achieving the company's environmental goals. At the same time, Avianca Holdings is continuously looking for strategies and better practices that contribute in minimizing the environmental impact of its operations.

Avianca Holdings
www.avianca.com

* Avianca's Operation (Aerovías del Continente Americano S.A.)

POWERING COLOMBIA WITH BIOFUELS

Latin America's huge farmlands hold a vast potential for biofuels, which if managed carefully can radically cut greenhouse gas emissions and fossil fuel use.

Colombia belongs to a select group of 30 countries of the 190 recognized to date, that produce all their own raw material for biofuels.

This provides major competitive advantages because Colombia started its program from advanced feedstocks: sugar cane for ethanol, and palm oil for biodiesel, which, in the recent life cycle analysis study, by EMPA of Switzerland, has been determined that these are the two most efficient current premium feedstocks , offering savings of greenhouse gases of 74% and 83% respectively.

The potential areas to increase production by more than ten times the current area for these energy crops, without affecting agricultural production and livestock intended for human consumption, and without affecting biodiversity, or protected areas of the country.

At COP16, held in Cancun Mexico in 2010, the national commitment was: "Colombia will stimulate the growth of biofuel production, such as ethanol and biodiesel, without endangering the natural forests or the food security of the Colombian people, and by promoting the use of these fuels in the national market with the aim of achieving a 20 per cent share of total national fuel consumption by 2020. These are actions that Colombia is interested in undertaking and willing to do, but it lacks the necessary resources and capacity, and will therefore require financial support for their implementation."

Since the issuance of a legal framework for biofuels production and, the document of State Policy, which established the national biofuels program, the sector has grown consistently.

This is by promoting the planting of new areas and developing necessary infrastructure, for the production of conventional biofuels (but with advanced raw materials) and, in compliance with mandatory blends that Government had established staggered according to the increase of installed capacity.

The industry has also prospered through the development of standards and based on studies and accredited testing, allowing a harmonious growth of the sector reaching the goal of 10% of blends expected for 2014.

Sweet fuel

From the point of view of the private sector structure, we find that it has been strictly national capital investment, coming from agricultural or agro-industrial producers linked to the production of cane or palm oil respectively.

Therefore, individuals or families traditionally linked to the agricultural sector are shareholders of the fifteen producers of current biofuel and, at the time of publication of this article, at least five additional projects, that are in various stages, from pre-feasibility to installation of plants, (some of them will come into operation this year).

The characteristics of the two main Colombian biofuel producers make each of the industries peculiar, and as such make it necessary to speak separately of each.

On the one hand, we have the ethanol producers, they are sugar mills located in the South West of the country, with a centuries-old tradition in the agricultural sector, concentrated in a production cluster.

In total these amount to 224 thousand hectares planted in sugar cane by 1,200 suppliers in 2012; 13 refineries, more than 40 producers of alcohol, food, drinks and liqueurs, two co-generators of electric power, a producer of paper, three sucro-chemicals industries, more than 50 major specialized suppliers, 88 organizations of workers, a cooperative of workers, two trade associations, two distributors and two research centers.

In 2011 they yielded an average of 122.1 ton / has (IDB - MME, 2011) at least 30% higher than Brazil and 15% higher than Australia. They produce more than 2.3 million tons a year, of which domestic market sales are 1.4 million metric tons and the remaining is sugar for export markets.

Colombia is the world's ninth largest exporter of sugar. They produce and export molasses, paper, confectionery and sucro-chemicals. Fertilizers is another line of production as well as concentrates for animal feed. The production of alcohol to mix with gasoline as a fuel began in 2005, and has been growing consistently; 389 million liters were sold at the end of 2013.

The power cogeneration capacity of sugar mills came to 190MW, with sales of 53MW through national electric interconnection network. The progress of this program is relevant. For 2015 the estimated power cogeneration capacity will be around 333MW in which 145MW could be sold.

Huge potential

On the other hand, there are biodiesel producers, with a production, for the end of 2013, close to the 503.000 metric tons; 9 plants approved with capacity of around 605,000 Tm/year, this industry consumes 50% of the national production of palm oil, i.e. dealing, 150,000 hectares in production for biodiesel raw material; generating nearly 20,000 direct jobs and 40,000 indirect.

However, unlike the conglomerate of fuel alcohol, biodiesel production is scattered in three of the four geographical zones which has been structured for the production of palm oil: the eastern zone comprises of 4 departments; the northern area comprising 9; the south central with 5 and the western part, for the production of biodiesel, is not considered because they are not a biofuel

producer but, paradoxically they are concentrated in the production of fuel alcohol.

Still it is expected that, in the future, when some issues have conjured, a revival will be seen in palm oil production from a model of productive conglomerate organized around new bio-refineries of advanced character.

62% of the cultivated area is located in small plantations (less than 1,000 hectares) in Colombia, this dispersion poses challenges in terms of alliances and associativity of

small and medium producers with other actors in the chain in the form of productive clusters that enables to achieve scale and exploit economies generated.

These challenges make it necessary to structure a model that allows optimization of production, to generate new products, applications and services, increasing research and development of new technologies or improvement of the existing and consolidate a scheme of relations of the different stakeholders that ensure their sustainability in the global environment in which the industry is developing.

Strong future

Colombia is progressing in several efforts aimed at sustainable development, initiatives such as the low carbon development strategy (ECDBC), promoted by the Ministry of Environment and Sustainable Development, the publication of the Colombian standard NTC-ISO 50001, for the rational use of energy and The National Biofuels Program, which were set out by laws 693/ 2001 and 939/2004, promoting the use of Biofuels: Bio-ethanol and Biodiesel respectively.

In 2012, the Ministry of Mines and Energy delivered the report of the Colombian biofuels lifecycle analysis (LCA), carried out by the Consortium CUE (National Cleanest Production Center), Pontificia Bolivariana University and The Swiss Federal Laboratories for Materials Science and Technology (EMPA); its results showed that the use of biofuels in the automotive fleet reduces in, at least, 74% emissions of carbon into the atmosphere arriving to 108% when methane is captured in the production process for power generation.

Fedebiocombustibles
www.fedebiocombustibles.com

NATIONAL UNIVERSITY OF COSTA RICA
UNIVERSIDAD NACIONAL DE COSTA RICA

The National University of Costa Rica is one of the country's leading academic institutions, with an historically strong focus on ecology, sociology and education. It also aspires to lead research into climate change and associated areas, through a series of innovative courses outlined below.

School of Environmental Sciences
At the school of environmental sciences from the national university of Costa Rica our goal is to train young students to become leading professionals in the fields of Forest Engineering and Environmental Management.

As a means to complement this goal while making our contribution to a more sustainable future, we also conduct research on these fields.
www.edeca.una.cr

Agroforestry and Sustainable Production Systems
The programme on agroforestry and diversified sustainable production systems develops research and extension projects since 2009 with the aim of recovering socio-cultural, technological-productive and economic values from common integrated farm systems in Costa Rica. It works together with small agricultural farmers providing assistance on:

- Agroforestry
- Diversified and integrated farm systems
- Evaluation and monitoring of the transition towards cleaner and more sustainable production models; and
- Consulting for national and international institutions

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Laboratory of Applied Tropical Ecology
The laboratory of applied tropical ecology offers services, consulting and research in the field of Forest Sciences for topics such as:

- Evaluation, optimization and follow up of plant reproduction techniques.
- Characterization, establishment and follow up of vegetation monitoring systems.
- Planning, implementation, follow up and evaluation of ecosystem restoration strategies.
- Characterization and evaluation of natural forests for conservation and/or sustainable forest management.
- Valuation of ecosystem services
- Evaluation of the vegetation component for environmental impact assessments

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COSTA RICA

Costa Rica University
www.una.ac.cr

Quality, Environment and Metrology Studies

The programme in quality, environment and metrology studies (PROCAME), is divided into three main areas:

- The Metrology Laboratory provides services for the calibration of equipment that measures mass, volume, temperature, dimensional and noise. Currently, it has a Quality Management System under ISO 17 025.
- The Occupational Health Laboratory conducts research on physical hazards, working conditions, and the development of management systems under OSHAS 18 000 and ISO 14 000.
- The Continuing Education Program aims to train professionals on metrology, occupational health, quality audits, noise control and future workloads, among others.

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Environmental Analysis Laboratory

The environmental analysis laboratory is an integrated academic program that develops actions in three areas: research, services and social extension. Its work on applied research on water pollution, soil, climate change and air quality, aims to improve the learning process of environmental sciences.

It provides technical advice and highly specialized services to public and private institutions and is directly involved in training scientists, engineers, technicians and other professionals in these fields.

Our organization is qualified, trained and has extensive practical experience to perform integrated services in environmental testing through a quality management system based on ISO 17025:2005.

We have completed accredited tests in water for human use, waste water, natural water, air quality, point source emissions and occupational exposure since 2005 (LE-024, found in www.eca.or.cr).

Climate change related projects include:

- Strengthening community-based water services organizations' (ASADAS) capacities on climate change adaptation in the Costa Rican Metropolitan Area.
- Methane flows and nitrous oxide from organic crops and hydroelectric reservoirs.
- CO2 emission factors and black carbon from various combustion sources.
- Regional and national GHG inventories.

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Climate Change Management through the forestry sector in Costa Rica

Forests and forestry play an important role in Costa Rica's path to a green growth and the School of Environmental Sciences has been a key contributor through various projects.

Climate change management through the forestry sector has provided valuable data for the past 10 years to promote the appropriate and balanced consideration of the sector's role in climate change.

Ongoing activities under this project include:

- Biomass and carbon accounting at the ecosystem level (developing the basis for the "Metrics" Chapter under Costa Rica's REDD+ Strategy)
- Quantification of non CO2 emissions from tropical forests
- Life Cycle Assessment of HWPs
- Remote sensing for carbon accounting
- (Agro) Forestry practices as ecosystem based approaches to adaptation (EbA)
- Consulting and capacity building

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VERTICAL FARMING: A GREEN SOLUTION FOR A 21ST CENTURY PROBLEM

In the past centuries we have witnessed an agricultural revolution and an industrial revolution. Agrilution is the third revolution, as Inspiration Business Officer Greta Streitberger explains.

Agrilution envisions a future of self-sufficient and sustainable megacities around the globe, equipped with Vertical Farms to supply citizens with fresh and local greens.

Vertical Farming can be described as stacking high-tech greenhouses on top of each other.

HOME-GROWING GREENS

Agrilution is developing and building a fully automated, high-tech, small-scale vertical farming home-appliance for growing food sustainably, anywhere in the world, without expert knowledge, seasonal nor regional restrictions. This disruptive technology offers numerous benefits, including the following:

- **Growing food at the doorstep of consumers**
- **Access to fresh, nutritious, local food**
- **98% less water needed**
- **70% less fertilizers needed**
- **2-3x faster growth rates**
- **Higher yields per square meter**
- **No pesticides needed**
- **No runoff of fertilizers or water due to closed system**
- **No negative impact on biodiversity and the environment**
- **No arable land needed due to soil-less cultivation**
- **Less surface needed due to vertical growing**
- **No seasonal, regional or climatic restrictions due to closed system**
- **No food waste in distribution chain**

Agrilution introduces VF into every household responding to the rising demand for organic, local and safe food. Agrilution offers a complete Vertical Farming package ranging from Consultancy, Control Software to Home-Vertical Farm and Refill Supplies.

Agrilution's technological innovation aims at the widespread introduction of Vertical Farming and bringing sustainable small scale solutions to the consumer to tackle some of our world's most pressing challenges such as fresh water shortages, food waste, the destruction of ecosystems, food safety and food security.

It is Agrilution's mission to provide users with the autonomy to sustainably grow fresh greens in their homes reconnecting them with what they eat.

Maximilian Loessl is Agrilution's chief executive.

"I envision, that together with our users we will write the books on how to grow any plant in a vertical farming system, creating the first global database for Plant Recipes in the world, so that economically feasible farms may arise in every city throughout the globe, in the near future," he says.

It is crucial to reconnect people with what they eat and educate them about the unnecessary negative externalities of conventional agriculture.

Our techniques offer a modern solution to home users, to grow their own fresh, safe and clean food, by positively contributing to the global food production.

Global impact

Vertical Farming allows growing greens in a closed environment independent from, season, climate, region and sunlight, offering higher yields and nutritional values in a shorter time, while using 98% less water.

With Agrilution's products, we enable everyone to have an impact on sustainable resource saving food production to break down our complex global food system.

Empowering the individual on small scale, global impact is reached on large-scale.

Agrilution
www.agrilution.com

agrilution

BUILDING MEXICO'S CLIMATE RESILIENCE

The Mexican government established the National System of Climate Change as an instrument that contains the national policy actions to address climate change issues.

Scientists from the Instituto Politécnico Nacional (IPN) are members of the Council for Climate Change, a committee aimed to advise the inter-ministerial commission for climate change.

The aim is to recommend studies, policies and actions, and to set goals designed to address the adverse effects and solutions of climate change, and to promote social participation as well through public consultations.

The IPN has added its research, academic and technical efforts to those from other main Mexican universities to prepare the first Mexican report of climate change.

Researchers of the IPN lead the work in two lines: i) coastal ecosystems flooding zones and adaptation, ii) mitigation and sustainable development.

IPN is also a member of the Consortium of Marine Research Institutions of the Gulf of Mexico and Caribbean, in this context IPN leads the regional program for Mexico's Integrated Coastal and Ocean Observing System that also address climate change.

Coastal ecosystems and flooding zones

The development of Mexico has been performed practically without an integrated vision of marine and coastal ecosystems.

Mexico has 10143 km of coastline, and therefore sea level rise could cause catastrophic effects on the 46.2% of the Mexican population living next to the sea.

During the last decade several coastal states in Mexico were affected by floods, storm surges and sea level rise, with critical social, economic, and health impacts.

Consequently, in the short term IPN believes efforts should be directed to address actions for adaptation.

Results of research accomplished by IPN are converted into practical tools for their integration in the public policy of climate change such as the coastal, land and sea use planning efforts, where IPN has participated since 2007.

The state of Tabasco is a critical regional point for the Mexican Government, while the history of floods in Tabasco state shows that this has always been threatened by the presence of intense and torrential rains, and the influence of the Grijalva-Usumacinta watershed the largest in the southeast of Mexico.

Tabasco is located at the lowest altitude in the Gulf of Mexico, and some counties are located in zones that just reach levels of 10-60m up.

Oil spill in mangroves, Tabasco, Mexico.

Founded in 1936, the Instituto Politécnico Nacional (National Polytechnic Institute, IPN) is the foremost public technological higher education center in Mexico.

The institute produces technology development and research of the highest quality geared to solving the challenges facing humanity, of which climate change is the priority.

Its projects feed in to the National Strategy for Climatic Action of the Mexican government.

IPN studies shows that there is a connection between the issue of development and the circle of poverty and vulnerability-disaster. This has been relevant due to the lack of design and implementation of housing policies.

Among the outstanding results, new projects emerged focused in the identification and evaluation of best building practices for safer and sustainable housing.

These results also induce the redirection of the public building policies, promoting government and home-builders positive response to the social demand for safe and sustainable housing, reducing vulnerability and increasing the resilience of the social sector from the impacts of climate change.

The IPN play a key role to provide knowledge and high quality skillful human resources to break the technological paradigm.

Our aim is to contribute in the construction of industrial policies that promotes development, including the equity and environmental sustainability.

Instituto Politécnico Nacional
www.ipn.mx

ARGENTINA'S GREENER FUTURE

The Buenos Aires Institute of Technology is one of the country's top research bodies, with a strong focus on sustainable development.

The consequences of climate change represent a significant challenge to our societies.

At the Buenos Aires Institute of Technology (ITBA) we are working on several key areas that will greatly contribute with generating new opportunities of dealing with the consequences of climate change and also limiting the sources of it.

Here we share some of them with you and we are looking forward to hearing from you on these and other topics where the university can add you value.

Masters of Science in Energy and Environment.
The MSc in Energy and Environment is part of Argentine plans to boost inter-university networks with Germany. It's a joint venture between Buenos Aires Institute of Technology (ITBA) and the Karlsruhe Institute of Technology (KIT).

Its mission is to identify requirements of the global energy sector, suggest policies to enhance competitiveness and promote the cooperation of the Association of German Business (ACTAA).

Centre for Strategic and Sustainable Development (CEEDS)
This runs research initiatives and projects in the following three areas:

1) the future of cities including who to adapt them to climate change.
2) alternative energy covering technological innovation but also public policies and business models.
3) sustainable infrastructure, which represents a key issue for Latin America, a continent that will have to develop whole new infrastructures in order to become more competitive and developed in the next decades.

Buenos Aires Institute of Technology (ITBA)
ITBA is the first private and non-secular University specialized in Engineering, Technology and Management to be established in Argentina.

Since 1959 the Buenos Aires Institute of Technology has been recognized for its academic excellence and rigor and for its commitment to generating and transferring new knowledge to society.

These traits have been recognized with three important national awards: the Konex Platinum Award for being the "Best Educational Institution of the Decade", the José Balseiro Award for the Best University Initiatives to Promote Technology and the Sadosky Award for Educational Innovation.

Also, the employment rate for students before graduation is 98%.

ITBA's students, researchers and graduates make a big impact both nationally and internationally.

In Argentina ITBA cooperates with over 500 companies, performs joint research with the National Commission of Atomic Energy and the National Commission of Space Activities, and provides technological services for the governments of the City and province of Buenos and Chubut.

ITBA's graduates occupy top positions in multinational and national companies, the public sector and are active in the most prestigious research organizations.

Interdisciplinary research, development and innovation play an increasingly central role at ITBA. The University's main strengths include: Computer Science and Learning; Dynamic Systems, Signals, Control, and Communications; Environmental Engineering and Applied Chemistry; Management, Innovation, and Materials; Micro and Nanotechnology; Robotics, Solid and Fluid Mechanics.

Internationally, the University has carried out projects for NASA, the World Bank and the US Department of Defence, among others.

ITBA's graduates are pursuing advanced studies at the world's most recognized universities and hold leadership positions at organizations such as the European Space Agency and the Inter-American Development Bank.

Furthermore, ITBA maintains partnerships with some of the world's top academic institutions (i.e. École Polytechnique de Paris, Technische Universität München and University of Pennsylvania, just to name a few).

The student-run South American Business Forum is an international business event fully planned and executed by ITBA students. It annually receives over 100 participants from around the globe and provides a unique setting for current and future leaders to contribute to sustainable development and competitiveness.

At some time these strengths are focused on key issues in ITBA's four strategic research areas: Agribusiness; Clean and renewable energies; Information and communication technologies; Health technology.

Buenos Aires Institute of Technology
www.itba.edu.ar

TEACHING SUSTAINABILITY IN CHILE

IDMA (The Environment Institute) is Chile's main technical learning centre which trains specialized technicians in environmental and sustainability practice.

Its areas are diverse and interrelated. We cover agriculture, renewable energies, landscaping, natural health and therapy, design, environment, risk prevention, sustainable mining, ecotourism, construction and veterinary science.

Each of them is based on an education program oriented on the sustainable development of the discipline.

Local focus

IDMA is not just a technical training centre: we are deeply committed to our local communities.

Key goals include reducing solid waste, driving energy efficiency and renewable energy projects, organic agriculture without chemicals, design oriented on the life cycle of the products to reduce the carbon footprint in the production system.

We also aim to boost hydrological efficiency in irrigation systems and natural preservation of parks through ecotourism projects.

Our main wealth is the human capital that we give to the country. These are technicians with the necessary tools to face detailed problems which are generated every day in environmental areas.

Our institution has a piece of land especially dedicated to academic training which allows the students to practice in the field all the knowledge given in the classroom.

The Technology Center for Sustainability (TCS) is a place with the required infrastructure and therefore, our graduates will have the tools that the labor market demands.

Early start

We are aware that the main engine of change to face the environmental problem is education, especially the first years of school (Elementary School).

To this end, IDMA created "Schools in Action", a project that trains teachers in sustainability, energy efficiency and recycling in order to strengthen the "ecological intelligence" in kids, reinforcing the social commitment from the first moments of learning.

During 2014 we also started the Sustainable Design Major, being the pioneers in this area in technical majors in our country.

This education programme aims to ferment, from the design perspective, innovation and sustainability in the life of products cycle. It involves leaving behind the old production practice of the line economy, encouraging the triad of the circular economy: Reduce, Reuse and Recycle.

We try to position sustainability among a rich range of disciplines that cover the basic productive requirements of our country in a globalized world, with ordinary yet challenging problems, such as the battle against global warming and climate change.

IDMA
www.idma.cl

WORLD VISION ECUADOR: THINKING LOCALLY, ACTING GLOBALLY

"The planet we have is our home. If we take care of it, we will achieve good living. If we do not, where will we live?"

By José Bagua, World Vision Ecuador

For the people we serve, climate change is not a topic for debate, but a challenge to be faced. In Ecuador, many of our farmers and indigenous peoples are losing crops and productivity.

They are seeing their irrigation water diminish or disappear, the snowcaps melting on the mountains, and rivers and lakes becoming depleted.

For us they are familiar, personal problems with first and last names – our own and those of our sons and daughters.

At World Vision Ecuador, solutions arise from conviction and become realities through action.

Our conviction

Mankind has had a limited view of nature as the possessor of life, as a mere source of wealth, with no need for care.

We need to see nature as a generator of life. This will lead to new levels of commitment among rural communities, businesses, cities, and the politicians that rule over it.

What we can do

In Ecuador, World Vision works with over 500 rural communities. We live and toil with them, so from an indigenous worldview, we would like to share a few key concepts that may help learn from each other about caring for nature:

- Life is cultivated. It is given in a harmonious relationship between seed, soil, water, fire and air.
- Nature needs us, but we do not own her. We respect her and receive what she gives us in a responsible way.
- The tools needed to avoid altering the balance of life on earth are available. If we use them, we will have life for many generations. The alternative is catastrophe or loss.
- If we take something from nature, we must also give something back.
- Learning starts early at home with our children. We need to change the one-directional paradigm of using nature without respecting it.
- Investment projects must seek not only economic gain, but also the promotion of culture, society and life in nature.

Join us!

Seeking integrated childhood well-being, World Vision Ecuador has been working with various projects together with indigenous populations. It is not just about implementing projects, but making them a part of a new understanding of our relationship to nature.

For example, the project to protect highland bogs and water sources plants native species to prevent the erosion of fragile paramo soils recovers ancestral knowledge about water and land preservation. This in turn improves grazing conditions and fiber production for textiles.

This is only one of such projects, where working together leads to processes of mutual transformation. Understanding the issues better helps us to find new kinds of solutions.

World Vision Ecuador
www.wvi.org/es/ecuador

World Vision

Science & Climate Change

ceiA3
campus de excelencia internacional agroalimentario

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The scientific teams of the Agrifood Campus of International Excellence ceiA3 (an aggregation of 5 universities and 2 specialized Spanish research centres), have extensive experience in research aimed at finding solutions as well as contributing to the international battle against the effects of climate change. These teams work primarily in two ways.

Seeking ... sustainability

Study and development of sustainable systems of resource management

Water

Programs for efficient management and use of water resources in agriculture and livestock

Soil

Study of the microbial ecology of soils and its effects on crop protection, and development of proposals against erosion

Research on the sustainable management of agricultural and livestock waste

Recovery of waste (energy, new products ...)

Minimising environmental impact of disposal

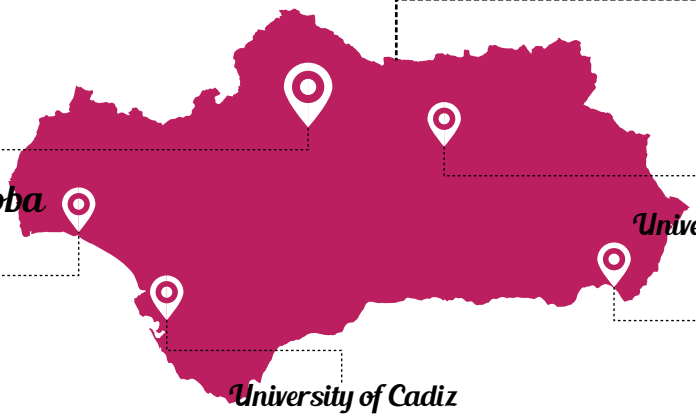
Enabling ... adaptation ... to change

Development of more resistant and effective plant varieties in the new climatic conditions

Testing new climate scenarios based on scientific predictions for the adaptation of traditional agricultural and livestock processes (planting, harvesting, livestock ...)

The ceiA3 in figures

- **276** research team
- **3000** researchers
- **107** graduate and postgraduates degrees
- **5** universities
- **2** research centres
- **64** collaborating companies



Climate Change Máster's degree

The ceiA3's vocation to combat the effects of climate change and contribute in the international effort to anticipate future scenarios has led to an adaptation its training programs with that commitment to the planet. In this sense, the University of Cordoba, leader of the ceiA3, extends its offer of Masters and PhD programs this year, to include a new Master's degree in Global Change, Natural Resources and Sustainability.

This new training program places its focus, as the main theme of action, on the analysis of the effects of global change on ecosystems and how to ensure their sustainable management. To this end, it has established the goal of training specialists who will be able to understand the different phases of the process of global change, so that in the future they may contribute to the mitigation of the changes produced by this process, within the existing commitments to Sustainable Management of Natural Resources.

EDUCATING TOMORROW'S GREEN LEADERS

Universidad Andrés Bello promotes the integration of academic knowledge, principles and values of sustainability in its academic community. Its main objective is to build a culturally rich and environmentally fair society with a profound vocation on sustainable living.

To achieve this objective, the university enhances the efforts of its faculties and research centers to strengthen the practice of sustainability in their performance. These include the developing and spreading of new knowledge, strategies, education and training in management, education, technology and science for sustainability, interacting effectively with business and society to transfer the ethical principles of sustainability to all.

The sustainability research and activities are focused in two main areas of action:

- research-outreach
- support of student proposals related to sustainable development.

In the research field UNAB created the Centre for Sustainability Research (CIS-UNAB) within the Faculty of Ecology and Natural Resources. In its research lines, two of them are directly related to the planetary impact of man on earth and climate change.

Universidad Andrés Bello is the largest university in Chile with over 45,000 students and more than 38,000 Alumni. UNAB is accredited by the National Accreditation Commission and was the first private university in Chile to do so in Research Accreditation. As of this date UNAB has 8 Scientific Research Centers and 9 doctoral programs.

One section is focused on the use of persistent organic compounds and their biogeochemistry on urban and sensitive ecosystems (e.g. Antarctic Continent). A second studies the carbon footprint of man at urban and industrial level, as well as the life cycle of manmade products and services.

The participation of students in sustainable development is a part of the R+D activities supported by the UNAB. The university has a team in the Atacama Solar Challenge. Our team reaches better positions in this race every year and, for the first time, this year with our young team SKÖLL, is expected finish the race in the leading position.

The investment made by Andres Bello University demonstrates our commitment to sustainability. As an example, in 2012 a photovoltaic energy system with 18 kWp capacity was installed with excellent results.

Its generation capacity has increased to 80 kWp. Furthermore, next year, UNAB plans to install an Eolithic energy generator in the Quintay Marine Research Station with a generation capacity of 40 kWp.

UNAB is one of the promoters and leaders of the Sustainability Chilean Universities Network Red "Campus Sustentable". The network promoted a protocol of activities focused on two main areas: sustainability education and campus management.

The Network developed initiatives leading to a postgraduate degree in education for sustainability. Campus management has been developed and is currently operating by means of the Clean Production Agreement, a sustainable campus environmental management tool that will help guide and promote efforts in sustainable management of campuses throughout Chile.

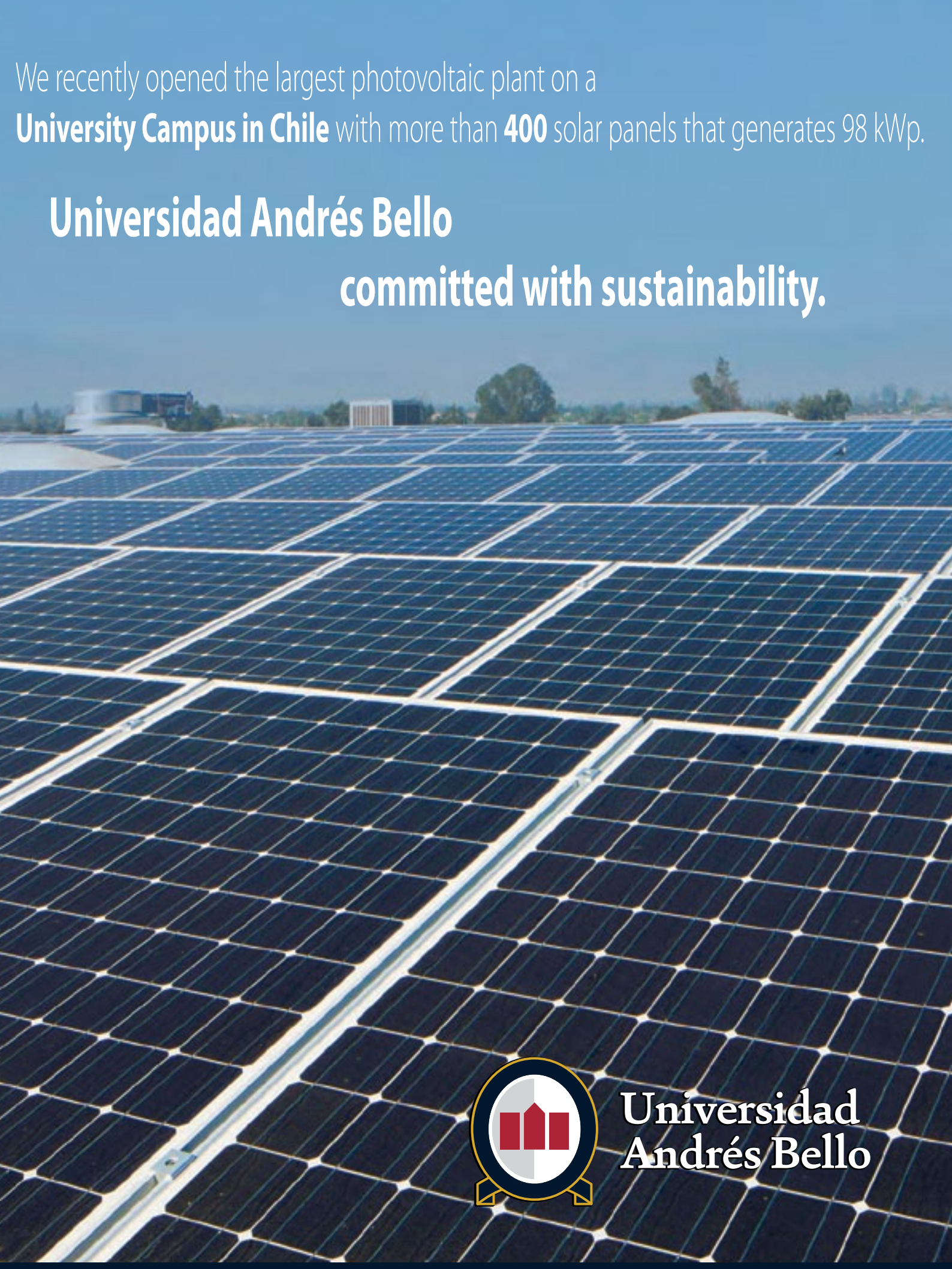
UNAB is also part of the international Global Compact Network, an initiative of the United Nations (UN) which has more than 12,000 participants in over 140 countries, and has become the largest international leadership development platform for the implementation and dissemination of responsible and sustainable institutional practices and policies.

These objectives have been supported by resolutions passed in the UN Conventions in the areas of Human Rights, Labour Relations, Environment and Anti-Corruption. Global Compact was officially born in 2000, after a call of the then UN Secretary General, Kofi Annan, to entrepreneurs at the World Economic Forum in Davos, Switzerland, to contribute to a more equitable and harmonious society.

UNAB's present Rector, Dr. Pedro Uribe, has reconfirmed its support for the establishment of the Global Compact Chilean Network at the Universidad Andrés Bello, lead by Margarita Ducci, Executive Director, and has encouraged new ideas for it's strengthening, while establishing its strategic goals: UNAB Sustainability and Social Responsibility.

Universidad Andrés Bello
www.unab.cl

Universidad Andrés Bello



CHE MSA Middle States Commission on Higher Education
www.msche.org 3624 Market St. Philadelphia, PA. USA.
Institución Candidata a la Acreditación, junio 2012

UNIVERSIDAD ACREDITADA
Comisión Nacional de Acreditación CNA-Chile
- Gestión Institucional
- Docencia de Pregrado
- Investigación
- Vinculación con el Medio

Por 4 años hasta diciembre de 2017

EDUCATION: PERU'S ANSWER TO CLIMATE CHANGE

Alas Peruanas University (UAP) is an institution that seeks to promote education, research and social projects to address the world's environmental problems.

Climate change, the destruction of the ozone layer, pollution, water scarcity, loss of biodiversity and other environmental issues severely threaten the continued existence of man and living species.

It is not a catastrophic prediction but the dramatic reality that puts our planet entering a dead end because of unsustainable patterns of production and consumption that make it unfeasible to enjoy a decent life.

Since the Stockholm Declaration of 1972, the World Conference on Environmental Education in 1977 and the Treaty on Environmental Education for Sustainable Cities of 1992 emphasized the important role of the university to address and solve environmental problems by integrating all areas of environmental action to achieve a new model of economically viable development, ecologically feasible, socially equitable for present and future generations.

UAP seeks to create a culture to environmental care using surveys on policies and strategies for sustainable development both nationally and internationally. We do this by developing a major national project to promote a strategic environmental care treatment.

UAP promotes energy conservation, saving paper and related materials, water conservation and segregation, recycling and solid waste treatment.

The energy situation in the world has changed in the last century. In the past 20 years energy consumed has doubled, this change is due to the development of developing countries, the need for electricity will continue to increase at a similar rate due to demand.

Within the Energy Savings Plan of UAP changes were made to the lighting of classrooms in different locations, thereby reducing the consumption of electricity generated many times.

We installed taps with timers, dual flush systems (liquid and solid) for toilets and irrigation of green areas with treated water; this is important because water resources are one of the major problems that humanity is facing.

Today, more than 1,110 million people lack access to

compost.

humus.

biodigestor.

clean water, with important consequences that this has on health, environment and sustainable development.

Good environmental practices in re-using paper for printing documents (paper applications on both sides) are also present at Alas Peruanas University as it is aware that the raw material for the manufacture of paper is cellulose extracted from trees being one of the causes of deforestation of forests, hence the importance of recycling.

The generation and disposal of waste in different offices from Alas Peruanas University - Lima, lacked proper treatment causing environmental problems. This problem is solved by a "Study of Solid Waste Characterization" (ECRS abbreviation in Spanish) in each of the offices of UAP - Lima, obtaining the number and types of solid waste generated daily, determining their re-use potential.

We have also ensured waste is now separated into different containers: green: glass, white: plastic, blue: paper and paperboard, brown: organic wastes. This has contributed to the awareness and sensitivity in students, teachers, administrators and other staff.

Treatment of organic waste is one of the activities performed at the Center for Research, Production and Technology Transfer (CIPTT abbreviation in Spanish) of Pachacamac Campus, which has the same units raising cattle, horses, South American camelid, ovine, goats, small animals (guinea pigs) and birds, which aims to study and research and production; product of this activity of manure increased the generation of greenhouse gases (GHG).

At present, these residues offer two types of treatment: aerobic through composting techniques - vermicompost for the development of organic and anaerobic digesters with technique for generating biological, biofertilizer and biogas fertilizer; thus contributing to the reduction of GHG emissions.

Alas Peruanas University
www.uap.edu.pe/ing

UBA: PIONEERING CLIMATE CHANGE RESEARCH IN ARGENTINA

Climate change is among the most significant research issues in the University of Buenos Aires. Global awareness about its strong political, economic and social implications means that it has evolved to become an issue of central relevance to both science and politics.

As a matter of current concern, specific sectors of society such as universities need to engage and be active in the search of solutions from regional to local scale. Universities play a key role in fostering a thorough understanding of the challenges of climate change by integrating technical matters with economic and social issues and also by informing and educating.

Universities can contribute in raising public awareness and improving communication strategies to make climate change science accessible to specific target groups including mass media, policymakers and average citizens.

Economic transition

Developing countries are the most vulnerable to the impacts of climate change and their response options are not only associated to their geographic and social contexts but also to the comprehensive knowledge of their exposures to hazard, their sensitivity to the exposures and their capacity to cope with and adapt to harmful impacts.

Regional universities can contribute significantly

not only by exploring vulnerabilities but also by providing and disseminating sustainable forms of management through the design of strategies and initiatives for the reduction of energy consumption and greenhouse gas (GHG) emissions.

The development of technologies, policies and practices would allow a transition from societies and economies mostly dependent on fossil fuels to reliability on, for example, energy efficiency and sustainable transportation.

IPCC reports

The University of Buenos Aires produces much of the research to improve the understanding of the dynamics of the regional climate, providing input for climate models. Studies on Argentina's current climate variability and future changes yield an assessment of the future impacts of climate change at a national level.

Crop agriculture, water resources, biodiversity and ecosystems, food security, coastal settlements and human health are among the systems and sectors that are being assessed. The University of Buenos Aires research in climate and social sciences, engineering, public health, law, policy, economics, agricultural and animal health, urban planning and sustainable production have contributed significantly in the drawing up of all Argentine national communication and in many of the Intergovernmental Panel on Climate Change reports.

In 2007, the University of Buenos Aires created a multidisciplinary program on climate change, known as PIUBACC by its initials in Spanish, in order to strengthen the multidisciplinary approach of climate change research. PIUBACC aims to produce rigorous independent research that can serve as input for the development of national laws and policies and that can also help to -pave the way to a sustainable future in climate agreements. The design of effective regional solutions demands a wide range of capacities across fields and disciplines and the interdisciplinary dialogue facilitated by this program generates synergy among the (knowledge building) actors involved.

Capacity building

Research and training are key contributions of the University of Buenos Aires to help identify climate change causes, consequences and vulnerabilities and to facilitate better policy making decisions. Understanding and communicating the role of policies in the climate-change solving process arises as one of the relevant actions of the multidisciplinary approach addressed by PIUBACC.

Other key actions accomplished are the Capacity-building and training of stakeholders and teachers at different levels in the dissemination of knowledge on the science of climate change and the variety of adaptation and mitigation measures available The University of Buenos Aires has a leading role in climate change science in Argentina.

As a university, it has the responsibility of helping to meet the challenges posed by climate change at national level. Rigorous independent research along with innovation and new developments originated within the university system serve as indispensable contributions to address possible climate change solutions for the country.

Climate change represents one of the most urgent challenges and the future of the planet is our collective and immediate responsibility. The University of Buenos Aires is committed to continue working on educating citizens informed on this matter who will serve society by privileging objective and rigorous analysis in the pursue of long-term sustainable solutions for mitigating and adapting to climate change.

University of Buenos Aires
www.uba.ar

UNIVERSITY OF LEON: PROTECTING AND EDUCATING

Research institutions must stand up and assume the responsibility to stop climate change, argues the team at one of Spain's leading universities.

The University of Leon (ULE) is one of the youngest and more dynamic public universities in Spain, willing to fulfill its foundational obligation of service to the development of its nearby community.

Since its creation in 1979 the ULE has become a hallmark of academic excellence in northwest Spain, attracting students and teachers not only from the Iberian Peninsula, but all over the world.

As an answer to the needs of society, the University of Leon has a wide range of educational possibilities among which, without forgetting Arts, Law or Economics, there is a clear predominance of the fields of sciences and engineering.

The ULE current Degrees have a well deserved reputation in the fields of biotechnology, environmental sciences, biology, veterinary, agronomy, mechanical engineering, electronic engineering and energy engineering, and mining and renewable energy.

Complementing its work in teaching, the university comprises eight research institutes and several technology centres, which carry on about a thousand high research projects through 125 scientific groups dedicated to R+D.

Some of the research groups in the ULE focus their activities in the study of the relationship between energy and environment, especially those research groups related to the Environmental and Natural Resources Institute.

This ULE Institute is fully dedicated to research activities related to waste management, including the development of innovative biotechnological uses in agriculture, as well as renewable energies.

Public-private partnerships

Some groups have a wide experience in the area of energy-bioproducts (their technology and application), after more than 15 years of active work which has been reflected in numerous published articles in prestigious scientific and technical journals at international and national level. This research has been done in collaboration with different national and international institutions, as well as some private companies.

Some of the most relevant areas showing the research interest of ULE, its commitment with environmental protection, and its concern on global warming and climate change, refer to its studies and projects on energy recovery from

various organic wastes through anaerobic digestion, wastewater treatment by MEC and MFC (microbial fuel cells), heat treatment (pyrolysis) of waste and fuels and production of biofertilizers.

The university has collaborated in the past in the development and implementation of pilot plants in these fields of research, and now is working together with industry in developing marketable prototypes for wider use.

ULE also belongs to different technological platforms at national and international levels, in an effort to protect the environment and create a cleaner world, like the Bio-based Industries Consortium (BBI) or the European Platform of Universities Engaged in Energy Research.

As a relevant example of ULE transfer of experience and knowledge to society, the University is currently coordinating the MOMATE Project (Modernizing the Training in Renewable Energies in the Maghreb) together with the University of Abdelmalek Essaâdi in Morocco.

This EU funded TEMPUS program includes partners from seven European and Maghreb Universities, and it attempts to provide an answer to the increasing scarcity of classic energetic resources, the growth of energetic needs, the concern about the safety of service provision, and the impact of climate changes.

North Africa

The major objective of this Tempus project is to follow up and support the trends already started in the Maghreb in the field of renewable energies as an alternative to classic resources, through the setting up of new degrees targeting the training of skilled local workers as well as researchers in North Africa in the field of renewable energies.

Other goals also include the updating and implementation of new training modules and programs for Degrees in renewable energies engineering (solar, thermal and wind) taking advance of on-line distance education platforms, as well as the development of practical education centers about renewable energies, and the creation of multi-task collaborative networks gathering all actors involved (universities, organizations, industrial partners and decision makers). https://sites.google.com/site/projetmomate/home

This is just one example of the commitment of the University of Leon to environmental protection. In today's world, every public institution, private corporation or individual must stand up and assume the responsibility to stop climate change, which poses a serious threat to the common future of our world.

As an ever-dynamic university, open to change, in constant contact with the realities surrounding us we can no longer ignore the importance of this moment. For us, the adventure of knowledge is an experience that marks one for life, as is borne out by all the students and teachers that have passed through our University.

On those grounds, the University of Leon is willing to stand up for a better world.

University of Leon
www.unileon.es

universidad de león

A MEXICAN MODEL OF SUSTAINABILITY

The Benemérita Universidad Autónoma de Puebla (BUAP) is a public research university, autonomous and decentralized, located in the city of Puebla, Mexico and is the flagship university for the State of Puebla.

Conscious of its social responsibility as a publicly funded institution it focuses its research efforts and scientific resources on the main problems affecting the region in order to maintain biodiversity and foster sustainable development.

Mexico is a vulnerable region in which changes due to bioclimatic factors, associated with climate change, have affected traditional ways of life and socioeconomic conditions.

In particular, pernicious effects of greenhouse gas emissions are felt not only in the heavily populated urban centers but are having effects on climate and weather patterns which are disastrous in a region where large sectors of the population are dependent on traditional agriculture.

Innovative research

Greenhouse gas emissions, can have different sources: 1) Electricity Generation, 2) Oil and Gas, 3) Transportation, 4) Residential and commercial buildings, 5) Industry, 6) Waste, 7) Agriculture (including livestock), and 8) Forestry (including deforestation and reforestation).

To minimize the environmental impact of climate change, different university departments and research groups (Agricultural Sciences, Computation, Chemical Engineering, Agrohydraulics Engineering and Environmental Sciences), have been collaborating in a multidisciplinary project entitled "*Carbon Sequestration in Soils*".

Its main goals are: to characterize forest systems and within them the dynamics of carbon as a chemical element, and to establish the modifications to carbon flow deriving from changes in soil uses. In this respect, it is important to remember that carbon is stored in soil, vegetation, and waste matter. The research is conducted in three regions in the state of Puebla: Teziutlán-Zacapoaxtla, Iztaccíhuatl-Popocatépetl, and Malintzin.

The cooperation of local agricultural communities has been a key factor in the development of this project. Carbon sequestration is considered a viable energy alternative to mitigate climate change.

Monitoring impacts

In addition, the project aims to develop a tool to model and anticipate the consequences of climate change on water resources, forest, and agriculture, especially in the Puebla region, and to provide viable routes to design and undertake mitigation actions.

It is important to mention that students from different disciplines are involved in all the research activities in the

BUAP

Benemérita Universidad
Autónoma de Puebla

BUAP, a University with Social Responsibility:
Promoting Sustainable Development

PERTINENT ACADEMIC PROGRAMS:

- Undergraduate degree program in Environmental Engineering
- Master's in Sustainable Management of Agroecosystems
- Master's in Environmental Sciences
- Doctorate in Environmental Sciences

Information:
http://cmas.siu.buap.mx/portal_ppred/wb/EDUCATIVA/facultad_de_ingenieria_quimica_1
http://www.viep.buap.mx/posgrado/

www.buap.mx

Benemérita Universidad Autónoma de Puebla, 4 sur 104 Centro Histórico C.P. 72000 Teléfono +52(222) 2295500 ext. 5013

project, as part of a strategy to educate and develop highly qualified committed professionals for the future generations.

Another important consequence of climate change is reflected in the quality of food, especially through contamination with fungus, for example *Aspergillus flavus* and *A.parasiticus*, and their potential mycotoxin, *Aflatoxin B1*, which is one of the most potent toxic substance that appears naturally, and could be present in maize, cereals and nuts. Food and feed contaminated with mycotoxins can affect animal and human health.

For this reason, researchers from the Institute of Sciences at BUAP are working on low cost decontamination processes and the development of natural absorbents such as: bentonites, soil derived from volcanic ash, and chitosan. At the same time, the School of Agro-hydraulics Engineering is also working on an anti-hunger program with an emphasis on food quality.

Biofuel development

In addition, the Center for Agro-ecology and Environment and its Master's program in Sustainable Management of Agro-ecosystems is in charge of studies relating to water management, natural pest control and organic management of crops.

Crucial to reducing greenhouse gas emissions is the development of alternative sources of energy. In this respect, researchers in the Physics Institute and in the Faculty of Physical and Mathematical Sciences are investigating Alternative Energy, such as aeolic energy and solar energy, viable for domestic uses in homes of six to eight people, as a partial solution to minimize the effects of climate change.

The Catalysis and Energy Research Group of the Faculty of Chemistry is conducting research on the development of biofuels while developing methods for purity testing of these biofuels.

An additional multidisciplinary research effort is being carried out by the Department of Sustainable Development, aimed at the generation of theoretical and methodological tools to investigate and understand the complexity of environmental problems within Mexican society, to develop programs for evaluating ecosystem sustainability within society.

At the same time this research group forms the backbone of the environmental educational programs, linking research and teaching and resulting in several theses and dissertations which analyse different environmental problems.

A related program carried out by the department is *Territory, Identity and Environment in Puebla*, which aims to study specific environmental problems; the research in progress at the moment deals with the environmental impact of the automotive industry.

This group also has collaboration with farmers from different rural areas; and is active in Environmental Teaching Programs and technology transfer to local communities outside of the university for the development of viable models of sustainability of "traspatio" activities.

These are some of the ways in which BUAP is deploying its scientific expertise for the analysis of climate change and its consequences, conscious of its privileged position to tackle these problems and its commitment to continue playing a role of social responsibility in this area

Benemérita Universidad Autónoma de Puebla
www.buap.mx

BUAP

Kaltia

INNOVATIVE SOLUTIONS WITH SUSTAINABLE TECHNOLOGY

We are specialists with a high level academic formation and professional experience. We create transdisciplinary solutions focused in sustainable designs for rural and urban constructions.

We mainly work on:

- Structural engineering
- Sustainable architecture
- Execution and supervision of constructions
- Consultancy
- R&D

Some of our innovation products are:

BIOBUILD®: Modular systems for housing that uses raw material of natural source, like bamboo, wood, stone, thatch and clay.

RECICLAB ®: Laboratory for generation of ideas, materials, concepts, products, process, business models, and projects for inserting the recycling culture into the construction industry.

SARIP ®: Automatized System of Intelligent Resolution for Structural Engineering Projects. It is a development of a specialized software platform for civil engineer projects.

BAMBULOSA ®: It is a prefabricated system based on prestressed bamboo beams and different kind of surfaces, that works to solve roofs and slabs. It can be adapted to climate, budget, specific needs, and can use local materials.

Photography: Luis Gallardo

Photography: Luisa Correa

KALTIA.COM.MX

MODELLING A GREEN FUTURE

David Eijadi, FAIA, is principal of The Weidt Group®, a company of energy modelling experts and software developers providing design teams and building owners with high fidelity data for energy/environmental decision-making.

Q: What is the role your business plays in creating a cleaner world?

A: The Weidt Group, the energy practice of the EYP, Inc. family since December 2012, was founded 37 years ago to reduce and account for the environmental impacts of buildings. We are 80 energy modelling experts and software developers who provide design teams and building owners with high-fidelity data for energy/environmental decision-making from pre-design through post occupancy. We currently consult on approximately 400 projects a year, roughly 2% of the U.S. commercial construction market, and our software tools are used by millions worldwide. Weidt provides energy modelling for all projects being designed by EYP Architecture & Engineering, our sister practice in the EYP Inc. family.

Q: Do you see climate change having an impact on your business?

A: Attention to climate change has motivated our business. But we have also made it our mission to move the whole market – not simply the environmentally concerned – so we provide cost-integrated, carbon reduction analytics with metrics also addressing energy consumption, first costs and operating costs.

Our consulting analytics, offered through several utility Demand Side Management programs in the U.S., was cited by the European Council for an Energy Efficient Economy (ECEEE) in 1999 as "The Program Most Likely to Meet the Intent of the Kyoto Protocol in the shortest time" *because every one of our 70 projects that year did better than the Kyoto Protocol*. Our consulting and software have been under continuous improvement since then.

Q: How can software help architects to create more sustainable cities?

A: The goal of creating a carbon neutral, or restorative building cannot be cost effectively arrived at by guess work. There are simply too many significant variables. And yet, until recently, most who have undertaken the task have predominantly relied on a "guessing and testing" approach to using software to create acceptable buildings (cities) with carbon neutral potential.

Older generations of software are too time intensive to permit any other approach. Tools built on the WeidtSim® platform by The Weidt Group take a completely different approach to creating families of energy simulation models for analytics and presenting data early and often through the design, construction and operation of a building.

Continuous improvement of the modeled expectations, from inception through operations, is how The Weidt Group helps buildings move from carbon neutral potential to carbon neutral reality.

Q: If you could do one thing to make the world more sustainable, what would it be?

A: The Weidt Group is doing the one thing it can do that few others could; we are addressing the need for earlier, more frequent and more comprehensive analyses for carbon and energy reductions in buildings.

Our software tools reduce the time it takes to create comparative energy analyses from weeks down to minutes. WeidtSim is a platform that programmatically builds energy simulation models for use in code compliance, product or policy evaluations and, of course, building design and operations. So rather than "guess and test" a handful of good solutions over weeks, policy makers and building designers can evaluate 100s of integrated options in minutes.

Q: What action would you like to see from governments on climate change?

A: Ask for and reward whole performance outcomes. Assist their communities in creating well-performing buildings [new and existing] and appropriately evaluate buildings to hold the design teams and operators accountable for the actual energy performance.

Continuing to offer rewards for component measures, as many policies have in the past, is a disincentive for, and no predictor of, whole building performance – which is what carbon reduction is all about.

Policies should be changed to uniformly strive toward Net Zero Carbon solutions. Good policies will recognize that delivering Net Zero requires a high level of certainty in forecasting design and economic performance and that accomplishment is not an event in the life of a building (or city) but, an ongoing performance activity that requires an ongoing level of prediction and measurement.

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IT'S TIME TO DESIGN FROM THE INSIDE OUT

Juan Carlos Baumgartner from SPACE Architects explains why the construction industry is at the forefront of the green revolution.

The topic of sustainable architecture and design is new in many countries, as is the case in Mexico, and while it has been possible to generate much awareness of this topic, the benefits of these types of buildings are still little known.

To understand the importance of the built environment and focus on sustainable interior design, there are two hard facts that are worth mentioning.

The built environment has a profound impact on the natural environment, the economy, health and productivity.

Buildings are responsible for approximately:

- 36% of the total use of energy
- 65% of the consumption of electricity
- 30% of the emissions of Greenhouse Gases
- 30% of the use of raw materials
- 30% of the waste that goes to the dump
- 12% of the use of potable water

It is clear that the only form of generating a sustainable society committed to caring for the environment is to involve all those responsible for designing, developing and building architecture.

Today we have access to great scientific, technological and operating advances in buildings to be used by designers, builders and owners that want to build sustainably and maximize both economic and environmental efficiency as well as wellbeing.

For years, interior design in some countries like Mexico has been understood as a kind of secondary architecture. Architects have focused on the generation of iconic buildings in spite of, on many occasions, the user and the environment.

For years we have designed, built and commercialized architecture that has left to one side the two most important elements that should have been taken into account in these processes: people and the environment.

This approach to architecture has several negative consequences but possibly one of the most notorious is the lack of specialists in interior architecture and, of course, in sustainable interior architecture.

If in general little is really known about sustainable architecture, much less is known about sustainable interior design. Paradoxically, a large part of what is known as sustainable architecture is in reality sustainable interior design.

In many countries, one of the principal reasons little sustainable architecture is generated is due to the scarcity of architects and interior designers with knowledge of sustainable interior design.

If we analyze it, 70% of the points to credit a project with an international certification of sustainable architecture have more to do with sustainable interior design than with architecture.

The type of materials utilized, the energy savings for efficient lighting, the water savings… all these matters are resolved in the sphere of interior design.

It is for this reason that in reality the future of sustainable architecture is in the understanding of sustainable solutions for interiors.

In the coming years we will see an evolution in architecture, in which we will find more and more specialists in interior design and architecture firms that will focus on interior design. There will be an increase in architecture firms designing buildings from inside out, and the building will be the result of the following formula:

Interior architecture + environment = architectural envelope

SPACE is an international architectural and interior design firm specialized in sustainable corporate architecture.

With offices in America, Asia and Europe this firm has succeeded in positioning itself as one of the international leaders in corporate architecture always seeking solutions respectful of the environment.

It is essential that all those involved in the production, design, construction and sale, and principally those that use the architecture, generate an awareness of the importance of interior design in sustainability; this may be an essential requirement for companies that want to transform themselves into sustainable companies respectful of the environment.

SPACE Architects
www.spacemex.com

design and sustainable architecture

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spacemex.com

juancarlos.baumgartner@thinkspace.biz

MARINGÁ: WHERE GREEN DREAMS TURN INTO REALITY

Maringá is a 67 year old municipality of Paraná State countryside, which stands out for its stunning buildings and countryside, as well as great human development indices (HDI).

A 'planned city' since its foundation, Maringá is considered one of the most environmentally friendly in the world, with an average 25 metres squared greenery per inhabitant.

Maringá's government targets 'organized growth', thanks to what we call 'organized society', which helps the public authority to design and plan the development actions over the years.

This union with planning and organization ensures Maringá boasts enviable human development rankings, holding the second best of the state, and the 23rd of the country.

Public policies for health, and the attention given to basic education, also ensure a positive impact across society.

Furthermore, Maringá is one of the municipalities that most invests own resources per capita, ahead even of Brazil's south state capitals.

The municipal authorities have been investing over the last 10 years an average 20% from municipal budget into structural works that contribute to the assistance to the population, offering more public equipment to all parts of the city.

Such factors make Maringá one of the best cities to live and invest in Brazil.

It is also a region that offers the opportunity of quality employment. The region is Brazil's second greatest clothing centre and it stands out on civil construction as well, with over one million square metres released to build a year.

The county is known as a university city, for its high number of academics, and its eight higher education institutions, with courses covering all knowledge areas.

Other important factors in making Maringá a unique urban centre include its place in the 50 best cities to live and invest, the fifth best public management and one of the best grades in the education evaluation.

There are few municipalities ahead, and all sectors have being working to improve these rates.

Maringá is a city with around 400,000 inhabitants living in its urban areas, and a further 770,000 in outlying regions. It is based inland, in the south of Brazil, and boasts a diverse population with a large immigrant community from Europe. The city's most famous building is the 124m high Cathedral of Maringá, the tallest church in South America.

First, we think it is important to invest in children's education, and develop future technologies.

Maringá is located in an important producing region and is in a privileged area in relation to the consumption centers and to the Mercosul economic zone, an economic and political agreement between Argentina, Brazil, Paraguay, Uruguay, Bolivia and Venezuela.

The good rates and investments are drawing high technology industries, leveraging the agribusiness, improving the regional production – which goes beyond grains, also relying on bioenergy, poultry farming, sugar and other primary items that can be processed regionally.

These are some attractions that makes Maringá highlighted in quality of life, with good schooling, attention to health, sports and leisure options.

The challenges to keep Maringá as a national reference are daily, always aiming towards an evolution with sustainability and quality of life at its core.

Maringá City
www.maringa.com

MARINGÁ CITY

MARINGÁ

DEVELOPMENT AND QUALITY OF LIFE IN ONE PLACE

A CITY FOR THOSE WHO WANT TO INVEST

Maringá is a planned city since its foundation. It has been 67 years of success and organization together with the private finance initiative, always thinking ahead on time. Currently, with one of Brazil's best financial managements, Maringá is one of the most job generating counties and 15th best to invest in the country.

A CITY FOR THOSE WHO WANT TO LIVE WELL

With one of Brazil's highest Human Development Indices (HDI), Maringá stands out for its quality of life. Simultaneously to having diverse leisure options, the city has large green areas, being one of the greenest of the entire country. For always having its eyes on education and health, Maringá is a city that prioritizes public welfare and is able to conciliate development and quality of life.

Beyond all, Maringá is a simply beautiful city.

See through the website: www.maringa.pr.gov.br/360

Access by your cellphone:

Prefeitura de MARINGÁ
Construindo uma cidade cada vez melhor

MARINGÁ CITY

GREEN CHALLENGE: LIMA'S XVIII PAN AMERICAN GAMES

Planning for the 2019 Pan American Games in Lima is being driven through the frame of sustainable development.

We aim to use the economic outlay and own assets to ensure there is a legacy that will improve the quality of life for millions of people.

The Games have the power to bring people together around common projects, which in this case can benefit the environment and community.

We see this as a power that will offer opportunities to future generations.

But we know this is a major challenge, given the Games will be the third largest sporting event after the Olympic Games and the World Cup.

This is not simply a question of infrastructure to welcome athletes and visitors in general. We also want to increase levels of sport participation at all levels of society, regardless of gender, age or social status.

It is a challenge that involves everyone.

The 2019 Pan American Games will aim to emulate the high standards laid down in the IOC Olympic Charter.

We will aim to "encourage and support a responsible attitude to the problems of Middle environment, promote

the concept of sustainable development in sport".

Lima 2019 also agrees to comply and respect the fundamental principles established in Article II of the Statute of PASO, which aims to ensure "the contribution to the education of youth through sport in the spirit of better understanding, friendship and respect for the environment, helping them to develop a better and more peaceful world".

The influence of sport can be harnessed and channelled to help make our city a better place.

Sport can be a powerful agent of change to Lima society can generally towards sustainability can work hand in hand to support government efforts to improve environmental conditions.

We have five years to leave our ready to develop the XVIII Pan American Games 2019, five years to strengthen our commitment to the sustainable development of other projects that will drive the improvement of a city, beneficial change scenarios for an entire country.

We believe sport and resource conservation go hand in hand. And we are sure it will be a wonderful partnership.

Peruvian Olympic Committee / Lima 2019
www.lima2019.org

SMART CITIES: THE FRONTLINE OF CLIMATE ACTION

Cities with a higher capacity to manage waste and to use resources much more efficiently are the key to making Planet Earth a better place, say the team behind the Smart City Business Institute.

The size and concentration of cities, as a human environment, is growing at an unstoppable rate.

Cities holding a population larger than one million inhabitants were not common back in 1975, and the global population living in these cities accounted for 500 million people - 12.5% of the total population of the planet in that year.

It is expected that by 2025 the number of people living in large cities, as described above, will reach 2000 million people, or a quarter of the forecasted global population for that year.

Cities can be great hubs of progress, economic activity and human development, and UN report *HABITAT* has shown that during the past decade alone, 230 million people saw their lives improve as a result of moving from their towns to a city.

However, not every aspect of this urban growth is positive.

As the population concentrates in the cities, so does the demand for energy and resources. Today's cities only cover 2% of the world's territory, but they consume 75% of the planet's natural and energetic resources.

As a result, these cities are responsible for the vast majority of CO2 emissions to the atmosphere, as well as most of the world's waste generation.

Driving efficiency

If cities are to continue their growth, our awareness of the environment and willingness to act must also increase, or the future world will not be sustainable.

This unavoidable challenge inspired the Smart City as a way of thinking and conceiving cities. Implementing Smart City solutions and technologies can help a city in its effort of saving energy, improve its use of resources, reduce the amount of waste generated, increase the flow of mobility, or gain transparency.

Every aspect of a city can be enhanced, and its many driving forces (institutions, companies, administrations and citizens) can profit from these initiatives, or even launch their own projects.

A core concept of the Smart City mentality is "efficiency", and certainly this can apply to the environment as well.

Best practice

At the Smart City Business Institute, we are aware of this need of impulse.

Smart City initiatives do not only have a huge market potential ahead of them, but they could change our world for the better, resulting in cities with a higher capacity to manage and treat their waste and to use and allocate their resources much more efficiently.

Our goal is to assist the developers of these initiatives by providing the best tools to consolidate their business model, find the best opportunities and partners in the market, and boost their recognition worldwide.

Our experience and knowledge of this innovative market, the wide array of services that we have developed and the institutions & partners that endorse us guarantee our capacity to kick start any Smart City project and to transform their authors into worldwide renowned professionals.

To some, the future may appear bleak. But we still have time to correct our route and to change our urban habits.

Transforming our cities into Smart Cities will certainly improve their sustainability and efficiency, thus contributing to shape a better global future.

At the Smart City Business Institute we will do our very best to promote the best projects out there, and to motivate more firms and professionals to join this path. And hopefully, we will meet many of in the path of increasing sustainability through innovation.

By Ms. Rosa Paradell,
General Manager,
Smart City Business Institute

Smart City Business Institute
www.smartcbi.org

Smart City Business Institute

LINKING LIMA: QUICK, CLEAN AND SAFE TRAVEL

With nearly 10 million people in a messy and explosive urban growth pattern stretching north-south over 100km, the metropolitan area of Lima and Callao faces tremendous mobility problems alongside serious urban and social effects.

According to the transportation master plan for Lima, developed with Japanese cooperation in 2005, there are about 16.5 million transport movements: 51% by public transport, 25% walking and only 0.5% by bicycle.

The document also states that if the required measures are not implemented, the average travel time will increase from 44.9 to 64.8 minutes, C02 emissions will rise by 300% and the average travel speed will decrease from 16.8 down to 7.5 km per hour in 2025.

Among the different projects designed to reduce the mobility problems in the Peruvian capital, the first Metro line in Lima ("Linea 1") initiated services in 2010. This 22km stretch was built with a design capacity of 193 million passengers per annum, connecting outlying areas of high population density quickly, safely and at low cost.

In April 2012, an additional 10.2 km stretch opened, and now Line 1 is complete-operating 26 stations along 33.2 km running through 11 districts of the capital.

The Autonomous Authority of Electrical Railways Mass Transit System in Lima and Callao (AATE) is a public organization, part of the ministry of transport and in charge of the planning, implementation and management of the complete basic metro network of Lima and Callao.

In total, this will be composed of six lines. Together with Deuman Consultants, the process of accreditation of Linea 1 of the Lima metro, under the standard of the Verified Carbon Standard (VCS) - the world's leading voluntary greenhouse gas programme - of the voluntary carbon market starts. The the next few months construction of Line 2 will begin, which goes from East to West. In addition the start of studies for Line 3 also begins. In total, this will be composed of six lines.

In connection with the procedures of the VCS standard, applies to the methodology CDM "Mass Rapid Transit Project - ACM0016". Under this scheme, the added value of the project was proving that the Linea 1 of Lima's Metro is the first project of Mass Rapid Transit System (MRTS) metro kind in Peru.

In addition, the project signals its reduction of GHG emissions per passenger-kilometre by comparison with conventional modes of transport to the project. Results of the implementation of the CDM methodology estimated that the emission reductions of the project will be 85,841 tCO2 annually.

The validation of the project was conducted by AENOR, and the final report was issued on March 7, 2014. Currently, the project is registered with the VCS (Project ID 1192) standard and seeking a buyer of the respective certificate. There are many environmental benefits of Metro Line 1 for the city of Lima. Having sustainable modes of transport is a strategic imperative to address the big problems that urban trips generate in our urban society.

Metro de Lima
www.aate.gob.pe

ABISA

ABASTECIMIENTOS INTERNACIONALES S.A.C.

ENGINEERING, SUPPLY AND INSTALLATION

LEADERSHIP AND PROMOTION OF CLEAN TECHNOLOGY

ABISA was founded in 1983 and is established as a leader in the business of representations, engineering development and facilities in Peru for the oil, mining, chemical, energy.

ABISA relies on its representations of international high-tech companies to develop projects in the country with social responsibility, which in the present context, we live in an economic and financial crisis that many people think are closely related to the environmental and energy crisis and ABISA tries to give technical solutions with primary attention to the environment and implementation of processes and equipment clean technology. In fact, this view which includes environmental management is necessary to ensure a sustainable production model, converting ABISA in Environmental Management agent, to develop projects and studies, and implement production systems that positively impact our results and society general. As Project Manager ABISA, I feel proud to work for this company

ABISA reconciles improving the competitiveness of the company with respect to the environment, primarily considering projects that can help minimize the effects of climate change, such as unifying the efficient management of energy and the minimization of environmental impact generated by the emission of greenhouse gases. Evaluate the risks and opportunities that climate change means for the company, incorporating the needs and expectations of the entire environment of the company, including employees, customers and community.

Patricia Rojas

CH.E. & Project Manager

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As a company we address climate change from different areas:

- From management and communication, dissemination of Policies, Programs and Bylaws of the company, so that all our employees and partners help develop their work with good environmental practices: reducing energy consumption, waste separation efficiency both in office and on the construction works in industrial plants.
- Proposing to our clients emission control processes, such as: conceptual studies, feasibility and design of Sulphuric Acid Plants for air quality control in reference to SO2 emission reduction and removal of particulate material developed with our represented company: Fleck Chemical Industries Inc. (FCII) for Zinc Circuit Acid Plant Modernization, new Lead Circuit Acid Plant and Gas Cleaning Plant for Copper Circuit Acid Plant of LOMC (La Oroya Metallurgical Complex), Junín, Peru.
- Running technological innovation projects that would meet environmental standards and also help to add value to the business, such as: installation of collection systems and reduction of methane gas, a product of the digestion of organic waste landfills, our technology represented by John Zink (of Koch Chemical Technology Group), leader in the biogas industry that allows to meet the environmental requirements of greenhouse gas emissions and access to markets and validation for the exchange of bonds or loans carbon. Case: Plants Landfill of PETRAMAS in Huaycoloro and Ventanilla, Lima-Peru.
- Running maintenance works with the use of environmentally friendly materials, such as the supply and application of coatings COMEX - BioSense Line, other representations of ABISA, These coatings are vinyl and enamel water-based paints, fast drying, odor almost imperceptible, as they not contain toxic compounds. The applications are diverse, both as decorative painting, architecture, and some food plants, making decorations that maintain sustainable balance with the environment.

We believe that our greatest commitment to managing climate change results in opportunities for ABISA, among which are: the benefits of reputation, cost reduction, the implementation in the country of new high-tech processes and environmentally friendly, change in the behavior of our employees, partners and customers.

For this reason, we expect the COP 20 summit will serve as a meeting point for rulers and business leaders promoting the use of technology, environmentally friendly, can get to specific topics that create sustainable development projects that may carried out in the medium term, the desire and the experience we have.

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ENGINEERING SOLUTIONS FOR A WARMING PLANET

Peruvian engineering company ECSA is committed to driving development which benefits local communities, business and the planet.

Resilience and capacity building are essential if communities are to cope with future climate impacts.

The oceans, air and land can survive temperature changes, but humans will struggle.

The strengthening of human capabilities is a priority for effective implementation of mitigation and adaptation measures. Without them, any strategy, action plan, national, international or global, will not be effective.

Indeed, man's mission is to find solutions, in this regard, the proposal should be the need to strengthen our capabilities to focus our efforts balancing the excess of industrialization for a less polluting model: a green economy.

Environmental management plans where populations can assume a major role in caring for their environment are vital.

Eng. Enrique Millones Olano, General Manager, ECSA INGENIEROS (left) & representative of European Award for Best Practices, Brussels 2011.

Photo: © Glauber Ribeiro.

Currently, many mining and hydrocarbon projects are viable without causing intolerable levels of pollution, considering the high financial profitability pursued by investment.

But the problem is that the concept of "win-win" is not a practice in relations of company – society.

In Peru many mining projects would go on without difficulty if the expected benefits and restoration of degraded ecosystems were delivered.

To address climate change, structural and biological measures must be undertaken.

These include the development of new and renewable sources of energy, urban waste treatment, payment for environmental services and reuse of wastewater.

We think the UN climate summit in Lima can help promote a more progressive form of development which respects local communities and benefits the environment.

We believe this should offer guidelines for world leaders and businesses to follow, especially governing the use and conservation of natural resources and direction of future consumption styles.

And we expect that the most powerful economies in the world, members of the Club of Paris and Brazil, Russia, India, South Africa and China match their economic policies to reduce poverty, misery and avert dangerous global warming.

ECSA
www.ecsa.com.pe

SOLUTIONS THAT PRESERVE THE ENVIRONMENT

Multinational giant 3M outlines some of the policies its Peru arm has employed to cut emissions, save energy and help the natural environment.

3M has over 40 years of handling environmental indicators and practical programmes to reduce environmental pollution, together with the development of thousands of products in a sustainable way.

We plan a new mission to push our business through technology, with products to improve the quality of life for Peruvians and make their days easier with innovative solutions.

3M Peru understands that the country is leading a movement that values future generations. The future we want is the potential that every human being has to contribute either by developing new ideas or improving the supply chain.

In this article, we present part of our contribution with targeted solutions for construction markets, from infrastructure and implementation of projects, highlighting the sustainability attributes that can both contribute to green building and other environmental certifications.

We invite you to join this world of green innovations, "think green" and share your challenges with us.

NOVEC 1230

Novec™ 1230, 3M presents a fire extinguishing solution that preserves the health of people, the integrity of documents, saving on time and money, while contributing to the preservation of the environment.

This innovative and singular solution is considered a clean agent. CO2 emissions from other agents are equivalent to the greenhouse gas emissions of approximately 211 cars a year, while Novec ™ 1230 is equivalent to the annual emission of 0.07.

Window Films

The 3M Windows Films, solar control, helps us to control the light and heating entering a building. Our options will provide an elegant means for solving many of the most challenging aspects of managing a building's energy use.

3M Windows Films block heat, saving tonne of air conditioning for every 100 square feet of glass exposed to the sun and blocking up to 99% of harmful UV rays.

Through the line of reflective sheets, the outside of the building will also look good. If you are looking for greater transparency in the glass and the sheet to be imperceptible, the best option is the Prestige line.

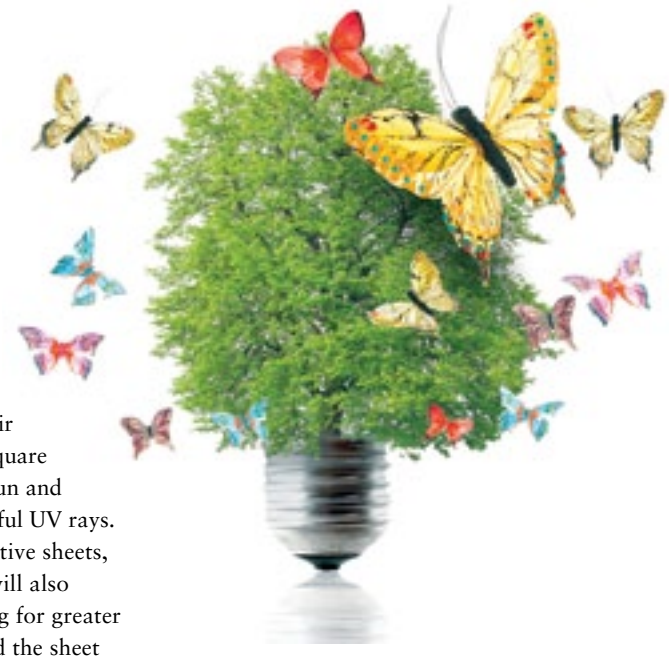
NOMAD

3M Nomad is a system that allows you to have a clean, safe and friendly reception area. This system consists of indoor and outdoor mats resistant to different types of traffic.

- The Cushion Plus line structure traps, holds and hides dirt.
- The Enhanced Interior line, a combination of nylon and polypropylene fibers, traps water and moisture from outside.
- The Special Rug line offers solutions for wet areas and heavy traffic.

V-White 3M Filters

V-White 3M Filters offer our customers a unique combination of performance characteristics and design including integral seals.



These filters are an excellent choice for building owners and facility managers looking to reduce their energy use and minimize the total cost of the operation, while still providing building occupants with filtered air quality.

V-White filters are the only filters that feature HVAC integral seals. No other manufacturer offers this feature, which helps prevent unfiltered air from flowing past gaps between the filter and the filter frame.

Integral seals are installed at the factory, which not only saves time during installation, but makes sure they are used together.

3M Peru
www.3m.com.pe

MEXICO'S URBAN NAMA

Mexico City "microbus". Photo: © Daniel Manrique.

Mexico's urban Nationally Appropriate Mitigation Action addresses the need to promote efficient residential communities, where roughly 45% of primary energy is consumed.

Urban areas are important contributors to GHG emission and their emissions are expected to grow with Mexico's population and the increasing trend of urbanization. The primary sources of urban emissions are electricity and fuel used in buildings, municipal solid waste, energy and fuel used to deliver water,and sewage.

Investing in efficient buildings and municipal services in Mexico offers a compelling opportunity for mitigating GHG emissions while also improving the quality of life for Mexican citizens. The aspiration of the Urban NAMA is to build on the successful 'Hipoteca Verde' ('Green Mortgage') and 'Ésta es tu casa' ('This is your house') mortgage programs operated by CONAVI that provide supplemental loans to cover the incremental cost of energy-efficient appliances in new homes.

The goal of the Urban NAMA is to achieve nation-wide emissions reductions through deployment of sustainable houses, solid waste, water, sewage and public lighting infrastructure funded partly through the development of carbon credits.

Sustainable urban design can be achieved through efficiency improvements in building and service delivery systems and through the deployment of community scale applications of renewable generation, waste reduction and processing, common HVAC and heating systems, and public lighting. Such developments bring many benefits to homeowners and society as a whole.

Owners benefit from lower operating costs due to reduced energy usage, greater comfort and improved health through better insulation and lighting. Benefits to society as a whole include increasing energy security, reducing greenhouse gas emissions, and improving air quality through lower consumption of electricity, the majority of which comes from burning fossil fuels.

Despite the benefits of sustainable communities for Mexico, there are financial, technical, regulatory and political barriers that prevent the deployment of sustainable municipal services under the current structure.

The NAMA deals with these barriers by creating a new set of incentives for the use of low emission efficient technologies, such as mortgages with favorable terms linked to NAMA communities, and by assisting with the up-front capital cost through grants or other assistance.

In addition, the program feeds back savings to the federal government through avoided subsidies that can be targeted towards sustainable economic development, reinvested into the NAMA fund, or used for clean technology investments in other sectors.

Under the Urban NAMA, the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) and CONAVI will work with State & local governments, as well as private sector stakeholders to provide technical guidance and funding for the installation of efficient municipal services in urban residential communities.

The NAMA will also put in place a robust MRV infrastructure to enable performance based payments, monitor program impact, and generate carbon credits. The monitoring component will clearly demonstrate GHG and financial benefits of sustainable community design and the sale carbon credits will provide an additional revenue stream that can be leveraged to access capital and fund installation of efficient municipal services.

This report will describe the national and political context under which the NAMA is being developed and explain why this instrument is needed to promote sustainable urban development. Furthermore, we describe the instrument in detail and outline the operational and financial structure needed to operationalize an Urban NAMA and identify technical options which may be employed in sustainable communities.

Finally, we review available data and methodological approaches to develop business as usual scenarios. This analysis ultimately leads to a detailed roadmap of next steps that can be taken to deploy an Urban NAMA Pilot in Mexico and ultimately scale the program up to the national scale.

SEDATU
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EXCELLENCE, SUSTAINABILITY, INNOVATION AND ETHICS

Independence was born in 1980 as a water drilling business. Five years later the company extended operations to the Oil & Gas sector. Our innovation, technology and sustainability are aligned with our corporate strategy and the value promise to our customers.

Our values are based on ethics, excellence and accountability to our stakeholders and we are driven by our social awareness. We innovate at every level and in every corner, transforming good ideas into products, services and holistic solutions, which makes us a company engaged in sustainable growth.

We currently have operations in 11 regions in Colombia with 46 drilling rigs: 35 oil rigs and 11 water rigs. The company has over 1500 employees. We have grown with our clients, adapting to change, implementing best practices and aligning with the highest standards. Sustainability of our operations is a clear alignment of our company's objectives with the business goals of our clients.

We have signed and adopted the UN Global Compact Principles and are one of the founders of its Colombian local network. Committed to implementing strategies to reduce our impact on the environment, and particularly our contribution to climate change, we voluntarily started measuring our carbon footprint in 2010 with the Greenhouse Gas Protocol standard. We are the first company in the Oil & Gas services sector in Colombia to have taken this route. Consulting firm Deloitte verified the methodology and calculation of our carbon footprint in 2011.

Given the nature of the operation of the company's equipment, our dependency on diesel fuel is clear. How can we reduce our carbon footprint and still be competitive in a difficult market environment? A big challenge of innovation that Independence has been willing to take on. After careful analysis of the different kinds of energy available and of the benefits and constraints, we are starting a few pilot projects to test technologies that could reduce our dependency on diesel, hence substantially reduce our greenhouse gas (GHG) emissions.

Cleaner operations

The company has two kinds of rigs for services in the Oil & Gas sector: drilling rigs and well maintenance, or work over rigs. We are starting pilot projects in 2014 aiming at reducing our GHG emissions associated with both types of rigs. A pilot project on a drilling rig aims at testing the use of different kinds of energy sources that could generate less GHG emissions than diesel.

We estimate that we could reduce the emissions of each drilling rig by up to 40%. Independence will be the first company to introduce technology with alternative energy sources in drilling rigs in Colombia.

In our search for more environmentally-friendly energy sources, we are also starting a pilot project on a work over rig, which consists of bringing new technology that can considerably increase the equipment's efficiency. The main objective of testing this technology is to reduce the impact on the environment and we could potentially reduce each work over rig's carbon footprint by up to 48%.

Independence is an Oil & Gas Services industry leader. The 34-year-old family-owned Colombian company has two business units – Energy and Water; Energy is engaged in well drilling and maintenance services with state-of-the-art technology; we operate with the highest quality and safety standards to ensure our stakeholders' wellbeing and satisfaction. Water is a main player in water supply chain services, promoting a sustainable management of groundwater resources.

If all goes well, we will replicate both pilot projects in as many rigs as possible.

Independence's maintenance team is also working on maximizing the equipment's energy efficiency by closely monitoring and managing all the engines running to adjust the number of engines required for different activities in the drilling process. We have estimated that this could lead us to a 10% reduction in diesel use.

Community well-being

While we test out the alternatives to substantially mitigate our biggest contribution to climate change, Independence's management decided to compensate the company's carbon footprint with carbon credits. After careful review of a wide array of projects to compensate GHG emissions, such as tree-planting, the company decided to buy credits in the REDD+ project "Chocó Darién Conservation Corridor" situated in the North-West of Colombia.

This project was the first conservation project in the world to be awarded carbon credits for protecting community-owned forests and it is the only REDD+ project in Colombia so far. It has world-renowned VCS and CCBA standards, which gave the company the assurance that the forest is standing and being protected for the decades to come.

The 13,465 hectares (33,275 acres) of tropical rainforest in the Darién region - one of the most biodiverse regions on the planet – is managed and protected by COCOMASUR, an association of Afro-Colombian families that collectively own the land.

Independence was the first private sector company to buy carbon credits in this project, first compensating our 2012 carbon footprint. We have committed to buying carbon credits for the subsequent five years. Sustainability is a core part of our business strategy; it's a way to feel, think and act.

We decided to support this project not only because of the avoided carbon emissions, but also because it protects a highly biologically diverse area (45 animal and 15 plant endangered species) and it empowers 826 families for the collective administration of their land, it generates sustainable employment and brings peace to a territory once known for its large displacement of people due to violent conflict.

Independence proves its commitment to sustainable development by implementing strategies and technology to reduce our carbon footprint and contributing to a fair and environmentally sound development of one of the poorest regions of Colombia.

Independence
www.independence.com.co

Independence

Biodiversity in the Chocó Darién Conservation Corridor

BOTTLING PERU'S GREEN INSPIRATION

Corporación Lindley, the strategic partner and bottler of The Coca-Cola Company in Peru, recently obtained LEED certification for its Trujillo mega plant.

Corporación Lindley (CL), partner and authorized bottler of The Coca-Cola Company in Peru obtained Leadership in Energy and Environmental Design (LEED) certification in the category new constructions for its Industrial Mega Plant in Trujillo, located in the area of Santa Rosa, district of Moche.

This achievement is an integral part of the commitment of The Coca-Cola System towards sustainability and preservation of the planet.

LEED is a certification system for sustainable buildings, developed by the US Green Building Council, consisting of a set of rules on the use of strategies aimed at sustainability in all types of buildings, which recognizes the construction of spaces environmentally responsible, and whose design allow the efficient use of natural resources.

Certification also confirms that this infrastructure is reaching important indicators of savings in the consumption of energy used in lighting, heating, ventilation and air conditioning, in a range from 24% to 50%. Likewise, a reduction in the use of water of 40%, and a decrease in waste generation of up to 70%.

LEED certified projects include in their design a number of sustainable features that combine environmental performance, economic and performance-oriented to the occupants. In this way, are less expensive to operate, make possible to have savings in water and energy, and are safer and healthier buildings for its users.

Corporación Lindley's Trujillo mega plant – which needed an investment of US$140 million – was conceived and developed under the guidelines of sustainable building, earned the LEED certification, which once again confirms its role as a pioneer in

Peru in the development of industrial facilities of type green building.

All these achievements, as well as other indicators of sustainability achieved, certify that this plant has managed to reduce their greenhouse gas emissions by 33% to 39%, just one of the main objectives that drives the Conference of Parties of the United Nations Framework Convention on Climate Change, Cop-20, through the commitment of the countries, institutions and companies.

In this way, the sustainability initiatives undertaken contribute to higher productivity of all the workers of the Trujillo mega plant, by providing a friendlier and comfortable environment to work, with high standards of occupational health.

In addition, with LEED certification the biodiversity and the ecosystem are preserved, by reducing the materials used and wasted, promoting greater efficiency in the use of the resources and improving the quality of life in the community, which is top priority of Corporación Lindley and Coca-Cola.

The criteria and principles of LEED certification are consistent with the Commitment to Sustainability of the Coca-Cola system, formed in Perú, by Corporación Lindley and Coca-Cola servicios de Perú. This commitment demands that by 2020 we improve the efficiency of water use by 25%; reduce the emission of CO2 25% and replenish all water used in production processes to the environment, by stimulating projects of reduction of consumption and installing effluent-treatment plants in all its operations.

Undoubtedly, the LEED certification obtained is a step forward for Corporación Lindley in its efforts to contribute to a better world in which building friendly facilities will become the future standard to reduce the impact on the environment.

Corporación Lindley
www.lindley.pe

LEED: Leadership in Energy and Environmental Design or Leadership in Energy and Environmental Design.

Efficiency in water consumption is an important aspect to obtain LEED certification.

It's now easier than ever to follow the latest developments from the UN climate talks

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SOLAR SALT: HIGH IN SODIUM, LOW IN CARBON

Sea, Wind, Sun and People, these are the elements that make the production of Solar Salt possible at Guerrero Negro, Baja California Sur, Mexico.

Ojo de Liebre coastal lagoon in the El Vizcaino Biosphere Reserve, in the central part of the Baja California peninsula, Mexico, presents natural areas that give refuge to different types of wildlife, terrestrial endemic species, gravid whales and calves. At the same time Ojo de Liebre Lagoon is the operation centre of the world's largest salt field.

Situated on 33,000 hectares of the most appropriate land for such an operation, Exportadora de Sal (ESSA) is the world's largest salt field. Very low rainfall combines with plenty of sunshine and wind on an ancient sea floor adjacent to the shores of Ojo de Liebre Lagoon in the Vizcaíno desert, to create the perfect environment for a solar salt field that benefits our planet and our people.

In Guerrero Negro, nature has given a head start in the salt production process: the seawater that flows from the lagoon into the concentration areas is naturally a bit denser than the seawater in the ocean due to the natural cycle of the tide and current flow in the lagoon.

As the seawater slowly flows through the system of concentration ponds, it gradually increases its density through sun and wind powered evaporation, until it reaches its sodium chloride saturation point.

Whilst increasing the density of seawater, the concentration ponds provide a protected habitat for fish, crustacean (like shrimps and crabs), and sea grass (like Ruppia y Zostera) that supports thousands of birds, including more than 60 migratory species that every year arrive to the Ojo de Liebre lagoon – Guerrero Negro Salt Field complex

Exportadora de Sal is one of the main salt producers and suppliers for chlor-alkali industry in the Pacific Rim, and also in the road de-icing, water softening and food industry salt market in North America.

Located in Guerrero Negro, Baja California Sur, Mexico, it is the world's largest salt field, with an actual yearly shipments of 9.5 million metric tonnes, and a loading berth located at Cedros Island, Baja California, Mexico, that can accommodate ships of up to 180,000 DWT.

The company is a Joint Venture between Mexican government Fideicomiso de Fomento Minero and Mitsubishi Corporation.

on their way to reproductive, feeding or growing grounds.

Also, within 6,000 hectares of the concentration ponds, in addition to the presence of several species of birds, some protozoa, insects and the brine shrimp Artemia, it is noteworthy the presence of microbial mats. These microbial mats are macroscopic arrangements of abundant species of microorganisms.

Microbial components of the mats have an important ecological role, not only as primary producers, nitrogen fixers and other processes that benefit not only the solar salt production process. They also sequester carbon dioxide, the most prolific greenhouse gas.

It is worth noting that recent research has revealed that the microbial mats themselves host greater diversity than any other known environment on Earth and that, according to American space agency (NASA) scientists, the oxygen production of one hectare of these microbial mats, equals that produced by an hectare of a mature forest. That is, microbial mats at ESSA's solar salt production ponds not only sequester CO2, but release oxygen to the atmosphere, contributing in this way to hamper climate change.

During the present administration, the company has developed an aggressive investment program focused on solving operation issues and increasing our product quality, whilst reducing costs,

in order to consolidate and increase our market share; because of this, in 2014 we will be achieving our goal and new record production and sales of 9.5 million metric tonnes.

ESSA is one of the main salt producers and suppliers for chlor-alkali industry in the Pacific Rim, and also in the road de-icing, water softening and food industry salt market in North America. Furthermore, this year we achieved the organic certification for our product and we are about to get the Farmaceutical Grade certification. In addition to the above, ESSA has also developed an option for the utilization of the main solar salt production process byproduct: bitter brine; in this way, we advance in the pursuit of a "zero waste" production process.

60 years of uninterrupted operation has proven that economic development is feasible to achieve without putting aside environmental preservation. ESSA's operation takes place within Mexico's largest Natural Protected Area, the "El Vizcaino" Biosphere Reserve, and World Heritage Site "Whale Sanctuary of El Vizcaino", and in all these years ESSA has proven to be a partner on environmental conservation, working side by side with authorities and NGOs, and supporting grey whales, sea turtles, pronghorn antelopes, golden eagles, white sharks and many other conservation projects.

ESSA is looking to the future, working everyday for a better world to leave for future generations. Our salt deliveries are made by maritime transportation, to reduce the "carbon footprint" of salt deliveries over land. Also, in order to reduce our carbon footprint, we have implemented a project to increase quality and production capacity through a low combustible consumption optimization process.

Through an oxygen generator-CO2 sequester process, low consumption of fossil combustibles and efficient logistics, ESSA not only achieve environmental targets, but also proactively work towards a better and clean environment, proving once again the viability of technology and nature working together for a better world.

Exportadora de Sal
www.essa.com.mx

EXPORTADORA DE SAL

Sea, Wind, Sun and **People**

These are the elements that make possible the production of solar salt at Guerrero Negro, Baja California Sur, Mexico.

#60añosdeESSA

EXPORTADORA DE

Exportadora de Sal is a Joint Venture between Mexican government Secretaría de Economía and Mitsubishi Corporation.

Exportadora de Sal, S. A. de C. V., is one of the main salt producers and suppliers for chlor-alkali industry in the Pacific Rim, and also in the road de-icing, water softening and food industry salt market in North America.

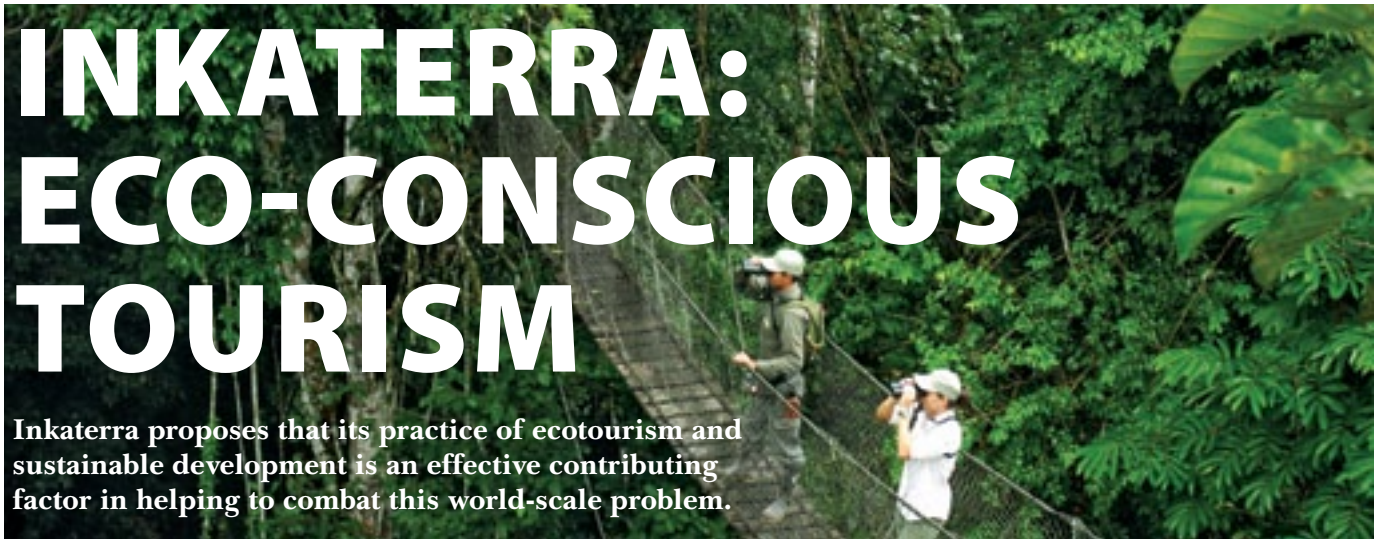
For 60 years we have shipped over 270 million tonnes of salt of the highest quality, maintaining our leadership as the world's largest salt field, achieving this year shipments for 9.5 million metric tonnes, and a loading berth located at Cedros Island, Baja California, Mexico, that can accommodate ships of up to 180,000 DWT.

Along these years, Exportadora de Sal has also proven to be an allied and a partner on environmental conservation in the Mexico's largest Natural Protected Area and one of the world's most important Whale Sanctuary and World Heritage Site, the "El Vizcaino" Biosphere Reserve, proving once again that man can work side by side with nature for the benefit of both.

E SAL S.A. DE C.V.

SE
SECRETARÍA DE ECONOMÍA

INKATERRA: ECO-CONSCIOUS TOURISM



Inkaterra proposes that its practice of ecotourism and sustainable development is an effective contributing factor in helping to combat this world-scale problem.

Inkaterra has pioneered ecotourism in Peru since 1975, and is currently renowned as a world leader in sustainable development. To promote Peru's cultural and natural virtues, we encourage scientific research, whilst contributing to biodiversity conservation, education and economic growth of local communities.

Financed through ecotourism, Inkaterra has performed scientific research since 1978, defining natural areas where its luxury hotels are established: Tambopata Amazon rainforest, Machu Picchu cloud forests, with plans to develop in CABO BLANCO Pacific Ocean and desert.

A total of 747 bird species, 362 ant species, 313 butterfly species, and over 100 mammal species have been inventoried within hotel grounds and surroundings. 24 species new to science have been described: 15 orchids, 5 amphibians, 1 butterfly, 2 bromeliads and 1 tropical vine.

Conservation projects are managed at Inkaterra field stations. At the Inkaterra *Reserva Amazónica* environs in Tambopata, the Inkaterra Canopy Walkway was built to study wildlife in the rainforest canopy. A 344m system of 2 towers, 8 platforms and 7 bridges at 100ft above the ground, it also contributes to activities such as bird watching.

Inkaterra was Peru's first tourism enterprise to be declared carbon neutral, mitigating the effects of deforestation in the Amazon and contributing to carbon sequestration by protecting a private ecological concession of over 15,000 hectares of virgin rainforest.

In Northern Peru CABO BLANCO still holds two game fishing world records. In 1953, the all-tackle world record (a 1560lb black marlin, filmed by Warner Bros. for its adaptation of *The Old Man and the Sea*) was landed by Alfred Glassell in this fishing cove. Four years later, the largest tuna ever caught (a 435lb bigeye tuna) confirmed its international status as a sport fishing mecca.

Celebrities visited CABO BLANCO, such as Nobel Prize laureate Ernest Hemingway, who went in search of standing marlins on board the iconic fishing boat 'Miss Texas,' recently restored by Inkaterra. Six decades on, the company is working on Peru's first marine conservation project.

Inkaterra has presented to the Ministry of Environment a technical proposal for the creation of a Marine Reserve in the tropical sea of CABO BLANCO, where 70% of the country's ichthyologic richness is based.

INKATERRA
www.inkaterra.com

Inkaterra: celebrating four decades of ecotourism in Peru
In 2015, Inkaterra will celebrate 40 years of sustainable tourism initiatives in Peru.

Building a sustainable tourism industry
There are currently five Inkaterra lodges, with a sixth, Hacienda Urubamba scheduled to open in 2015.

Safeguarding Peru's natural riches
Each year, Inkaterra welcomes over 100,000 travellers, preserving and showcasing Peru's natural and cultural wonders for the world.

More than 4,000 locals have been trained since Inkaterra was founded. Career opportunities in hospitality, field guidance and agroforestry projects on cacao and Brazil nut, are bonded to Inkaterra's sustainable approach. Workshops and conferences are constantly organized for local communities, to raise awareness on environment conservation.

UNCTAD BioTrade Principles fulfilled by Inkaterra*

Inkaterra fulfils all BioTrade Principles and Criteria (United Nations 2007), established by the United Nations Conference on Trade and Development (UNCTAD):

Principle 1: Conservation of biodiversity.
Principle 2: Sustainable use of biodiversity.
Principle 3: Fair and equitable sharing of benefits derived from the use of biodiversity.
Principle 4: Socio-economic sustainability (productive, financial and market-management).
Principle 5: Compliance with national and international regulations.
Principle 6: Respect for the rights of actors involved in BioTrade activities.
Principle 7: Clarity about land tenure, use and access to natural resources and knowledge.

(*) Perfil Sectorial de Ecoturismo (Manuel Bryce Moncloa, July 2013)

INKATERRA
AUTHENTIC NATURE TRAVEL
1975

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FIND YOURSELF IN PERU

INKATERRA MACHU PICCHU PUEBLO HOTEL

INKATERRA RESERVA AMAZONICA

INKATERRA HACIENDA CONCEPCION

INKATERRA LA CASONA

www.inkaterra.com

HUMANITY IN CRISIS: PROBLEMS PILING UP, TIME RUNNING OUT

Are all possible strategies being employed to combat crises, asks Daniel Hellin, CEO of sustainability consultants I&D Gaia.

To speak of innovations as necessary without first considering the accompanying social attitudes would be an exercise lacking in sufficient rigour. Not to take advantage of the opportunity provided by the struggle against crises to re-establish and consolidate civic values would run the risk of papering over the wounds of humankind.

"Our main challenge in this new century is to take an idea that seems abstract, sustainable development, and turn it into a reality for all the peoples in the world," said Kofi Annan, former UN Secretary General.

Individuals, families, companies, associations. The smaller our scope, the more a situation of crisis catches us by surprise. The often controversial information in the media adds to the confusion; the reality is dressed up to prevent social alarm.

Moral values have become more relaxed[1] and self-assessment is even more difficult without recent historical references in such a heterogeneous suite of crises. Not circumstantial crises but symptomatic of the social and political models of modern civilization[1] and its globalization.

Radical solutions

Let us correlate the extensive economic, environmental and social fronts with geo-political scenarios. In developed countries, the legitimate quest for wellbeing and paternalist governments have tended to run unchecked; they usually lack any prospection of derived risks or else allow negative repercussions.

The consequential crisis-related cutbacks in the aid provided by first-world countries to their under-developed neighbours reduces the latters' potential to emerge from poverty and develop them-selves, thus increasing the so-called "beacon effect". And those developing countries are on the fast track to international competitiveness and tolerate the same unsustainable actions.

A toxic economy, social dehumanization and climate change are just some of the most evident factors resulting, but their holistic nature makes these crises a SINGLE RADICAL CRISIS that must be dealt with as a whole.

Let us acknowledge a past full of strong imbalances and irresponsibility. Mistrust, paralysis, indifference, omission, all negative attitudes that are incompatible with a fighting spirit, stemming instead from our horror. But "we are not brought together by love but by horror"[2].

It is time to combine our mutual awareness and put forward the **Paradigm of Sustainable Development** as the joint solution for all fields of society. Solidarity and effort must be our present. Let us innovate from the bottom up through active social participation. Let us reinvent ourselves as a society to achieve a lasting future. Its foundations must harmonize and integrate: a viable economy, a sustainable environment, effective technological development, a fair and just social state and education in moral values.

And all this would be worthless if people were not our ultimate priority, if moral values were not the norm for all social relationships. Our solidarity must mean thinking globally and acting locally.

Daniel Hellin, CEO, I&D Gaia

I&D Gaia

Established in 2007 at the initiative of its CEO, Daniel HELLÍN AYALA, as a comprehensive sustainable development company to provide consultancy, roll-out and training services in Sustainable Development focusing mainly on markets close to our Hispanic idiosyncrasy.

Proposed roadmap

It is necessary to have a new concept of service, through **Sustainable Development Companies** that, based on their know-how and expertise, can promote a culture of **Sustainable Development Leadership** in organizations and become involved in consultancy work and, where necessary, in its roll-out on the ground.

With the ability to co-operate transparently in order to provide training for those developing the new basic concepts for **Leadership Management:**

- **Sustainable Development Office:** The body responsible for managing leadership, led by the teachings of experts and forming an integral part of the structure. Based on a commitment to Total Sustainability and its Maintenance by the Senior Management, this Office will plan strategies and tactics, handling the harmonious roll-out and monitoring the outcomes.
- **Sustainable Development Specialists**, as an additional qualification necessary for those with executive responsibility in the Organization's departments (R&D, Procurement, Production, Ad-ministration, Marketing, HR, etc.), making up the core team alongside the SD Office.

Action Scenarios: High priority in view of their weight and proximity to citizens:

- **Corporate Sustainable Development:** Considered as the most exemplary strategic development for Companies, Associations, Training Centres and Public Administrations, etc., based on the principles of Total Sustainability and its Maintenance, this will be applied to their operations and their relations with stakeholders. It will be instrumented through policies and procedures and it will be an integral part of their management systems, compatible with and open to their quality systems, environmental management systems, HR and health systems, etc.
- **Liveable Sustainable Settings: Buildings, their interiors and affected surroundings.** In view of their significance as the habitat for individuals and having regard for all intrinsic action areas: Efficiency in the consumption of resources. Habitability. Safety. Health. Connectivity. Waste. Control and Automation Systems. Consideration of the entire Life Cycle: Initial design, Construction, Operation and Demolition. Always respecting all of the goals of Sustainable Development in Social, Environment and Economic terms.
- **Management for Environmentally Sustainable Development**
  This scenario is common to both of the above, focusing on:
  Life-Cycle Analysis of the impacts of all processes
  Carbon Footprints and emission rights trading

Priority groups, on which to focus our efforts and our reach:

- **Small and Medium-Sized Enterprises (SMEs):** In view of their weighting in the country's business fabric, their value in the development of the regions and their position of proximity to Individuals.
- **Multi-disciplinary professionals:** For proper qualification based on prior technical knowledge suitable for the priority action scenarios. These professionals will cover the needs for Sustainable Development Leadership Managers.
- **Educational Centres**

To target these offerings exclusively at business and professional sectors would be to shirk our responsibility, as we would only obtain the re-education of the current production-oriented society by reducing the current sources of unsustainability, but we would not have contributed to rooting out the unsustainable patterns imbued into future generations from the cradle. The expertise of a Sustainability Plan Consultancy and Implementation Company is what qualifies it to run training plans in this subject area.

I&D Gaia | www.idgaia.com

[Notes: (1) "Essay on Civic Humanism by the Spanish philosopher Alejandro Llano". (2) Poet J. L. Borges]

I+D GAIA S.L.

EFFICIENT WASTEWATER TREATMENT THAT LOOKS AND SMELLS LIKE A GARDEN?

The Answer Is YES!

Organica Water is a global provider of innovative solutions for the treatment and reclamation of wastewater. Over the past two decades, Organica has developed a truly unique approach, enabling wastewater treatment providers all over the world to address water challenges in a cost-effective and resource-efficient manner. Founded on the fundamental belief that nature provides the most efficient means of wastewater treatment, Organica solutions offer significant cost savings over other solutions, and harmonious integration into modern urban lifestyles. Finally, Organica solutions are aesthetically-pleasing, odourless, and space-efficient, facilitating reclamation of surrounding land.

Sustainable Living / Building

We are Resilient. Not only energy-efficient and requiring minimal maintenance, they are able to adapt to changing conditions without interruption of effluent standards. While saving on construction requirements, Organica facilities are cost effective and utilize standard greenhouses (or shading structure) to enclose our facilities, creating an aesthetically-pleasing facility.

Renewable Energy

We recycle. Organica solutions offer potential for water reuse and reclamation. Our facilities produce water suitable for many applications, including irrigation and cooling systems. Such reuse provides water back to the community, generating both financial and environmental benefits.

Environmental Management Systems

Organica solutions are able to alleviate many of the water scarcity issues the world faces today. With a significantly reduced physical footprint and a more efficient method of treating wastewater, Organica facilities are able to support densely-populated areas with limited land available for wastewater treatment facilities, yet commonly facing the greatest needs due to their large populations.

Finance and Funding

Organica facilities require similar capital investments to conventional processes, yet provide significant savings in operating costs (commonly 30% or more). Additionally, use of Organica solutions provides flexibility in facility siting, minimizing infrastructure demand for sewer networks that commonly outweighs treatment costs by a 9-to-1 ratio. As a result, minimizing connection network costs is crucial to the overall finances of wastewater treatment. Organica empowers total collection and treatment costs savings, freeing the urban planning process from pumping wastewater "away", thus eliminating potential for local reuse.

Research and Education

Organica's research facility at their Telki (Hungary) reference facility allows us to continuously improve the FCR process, with greater understanding of the biological kinetics as well as the supporting instrumentation and control systems.

Empowerment Tools

Organica Central Station is an industry-changing software tool, enabling users with educational resources but also planning tools that allow users to quickly and efficiently analyze treatment alternatives. Understanding what your facility will look like, how much it will cost, and how it can be implemented seamlessly into the surrounding environment (all before breaking ground) is a value we provide to all of our customers.



Interested? GET IN TOUCH WITH US TODAY!

www.OrganicaWater.com • CentralStation.OrganicaWater.com

REDEFINING THE PLASTICS INDUSTRY

ESENTTIA is committed to provide sustainable and innovative solutions to satisfy our clients needs, promoting business growth and positioning in their target markets.

ESENTTIA is a Colombian company and a subsidiary of Ecopetrol, Colombia's Oil Company. It's dedicated to the production and commercialization of polypropylene, polyethylene and masterbatches.

Formerly known as Propilco, the organization has entered into a profound process of internal change, including redesign of our mission, vision and structure, encompassed within our Strategy 2017.

The final stage of this process was the change of our brand to ESENTTIA.

Our new corporate identity: ESENTTIA, vital for industry, essential to life, is the basis of the organization's future, in an effort to be recognized as a vital business partner, being capable of anticipating our customer's needs while leaving a strong footprint.

ESENTTIA is focused on people, not only on developing our staff's talent, but on the constant creation of solutions for people's needs, generating value for the plastics industry and raising life quality by impacting human development.

Our role in the plastics industry is vital. For this reason we are committed to provide sustainable and innovative solutions to satisfy our client's needs, promoting business growth and positioning in their target markets.

To this end, we stand as their allies, providing them with top quality commercial and technical services by optimizing and upgrading our technologies and processes, expanding our production capacity and strengthening our customer service channels, to offer a portfolio of versatile products and solutions in an all-inclusive way.

ESENTTIA is the third largest Polypropylene producer within Latin America, with a total production of 500.000 tons per year. 55% percent of our total sales go to export markets, reaching more than 30 countries worldwide.

In Colombia's market, ESENTTIA currently holds a market share of 81%. As part of our Strategy 2017, we have defined Colombia, Ecuador and Peru as our target market, continuing our steady growth within Central and South America, among other markets.

ESENTTIA directly employs 300 people, while receiving services from more than 450 contractors, with a high level of focus on our Health, Safety and Environment duties.

City with needs

ESENTTIA is located in Cartagena de Indias, Colombia. Situated on the Caribbean Coast, Cartagena was declared by UNESCO, in November of 1984, as World Cultural Heritage, due to its fortresses, monuments and colonial houses, found within the limits of the walled city.

With a population of 990,000 thousand people, its main economic activities are related to the petrochemical, logistics/ports, tourism and agroindustry sectors, with an unemployment rate of 8.6% and an inflation rate of 3.12%, for the last 12 months.

29.2% of Cartagena's population lives below the poverty line and 5.8% below the indigence line. Regarding education, the net enrolment ratio is close to 90%, while nearly 100% of its population has access to basic health services.

In terms of public services, there is 99% coverage for aqueduct, 90% for sewage and 98.83% for electricity. The situation is very alarming regarding household coverage. There are 244,000 houses in the city, with a deficit of 67,000. Additionally, relocation of 27,000 households, located in high risk areas, is required.

Our social commitment

We believe that in ESENTTIA we can make impossible things happen. That is why, from this imperative and as part of our Corporate Social Responsibility Policy, we identified the ability to produce a variety of applications to transform lives, based on plastics waste starting from the recycling of products we consume daily, such as packages, packaging and plastic containers.

Considering Cartagena's main needs of household and recreation spaces for its children, we started developing social projects reconciling a proper end of plastics cycle with the social needs of our surrounding communities.

This is how our leading project, called PoliHabitat, was conceived: we recycle plastics to build homes, boosting the end of plastics cycle, while having a substantial impact on our community's quality of life and their families. The basis of PoliHabitat is our constant challenge to outplace regular standards, looking for innovative alternatives for the use of plastics while taking care of the community's need for appropriate household conditions.

To this day, we have presented 10 families with an equal number of houses, built from recycled plastic, under very respectable conditions, improving their living standards. The houses, each approximately 50 square meters (including family room, 3 bedrooms, bathroom and kitchen) help to relieve one of Colombia's biggest unsolved needs.

The second stage of this project encompasses public-private partnerships, in order to provide Cartagena and Bolívar with playgrounds made from recycled plastic, ensuring safe places for child development in communities who need such spaces. ESENTTIA will provide playgrounds for 8 parks in the city of Cartagena and 20 parks in different municipalities of Bolívar, ensuring childhood safety and innovative spaces for a proper use of their free time.

ESENTTIA also supports different educational and health related programs, aiming to promote an improvement on the quality of education provided, giving children the possibility to study music or play soccer during their free time and having a yearly health day at a school in the city.

Most of our projects involve a Corporate Volunteer Program, with active participation of our staff, working together to make a difference not only in terms of our country's needs, but also in proving that plastics can be used for social benefit when properly recycled, bringing the end of plastics cycle to real life applications.

In ESENTTIA we know our project's power to change lives while taking care of our community. We build dreams and a hopeful future for people in Cartagena de Indias, our city, with this completely innovative and human project. Join us and help us.

ESENTTIA
www.esenttia.co

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by Propilco
Vital para la industria, esencial para la vida.

www.esenttia.co

Essential is

our commitment with
the end of plastic cycle and
a sustainable planet

Polypropylene, Polyethilene
and Masterbatch.

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Vital for industry,
essential to life.

GOING FOR GOLD: SUSTAINABLE MINING

Gold Fields La Cima S.A. is a mining company with holdings in Peru, Australia, Ghana and South Africa.

As a result of good labour practices and after a rigorous audit process carried out by SGS firm, Gold Fields La Cima was certified as entrepreneur partner by ABE (Association of Good Employers), a non-profit organization sponsored by the American Chamber of Commerce of Peru (AMCHAM).

The audit, carried out by SGS during the first quarter of this year, assessed the fulfilment of ABE's required criteria in several aspects, such as wages timely payment, benefits and social laws.

"We are very proud and, at the same time, we have a great responsibility at the moment we obtained this recognition," said Verónica Valderrama, Gold Fields Vice President of Human Resources for the Americas Region.

"We ratify our commitment to pursue policies that seek ending labour informality in the country and increase respect and good treatment among our employees. For Gold Fields, our people are the soul of the business".

Tough audit

The company has an attractive remuneration policy, aligned with goals that encourage high performance. Through surveys carried out by qualified firms, the company's position in the mining market is analysed in order to keep an adequate system, making sure the salary scale is within the average, or it is more functional concerning talent or position.

In addition, the company offers quarterly production bonuses which are subject to operation results and safety standards compliance.

SGS audit also incorporates a performance evaluation method to promote employees' feedback and an associated reward system. Gold Fields La Cima carries out an evaluation process which involves designing and implementing individual development plans, where the employee plays an active role identifying his/her expectations, interests and relevant aspects to be strengthened.

Training is also taken into account when certificating an entrepreneur partner. Accordingly, the company has implemented Gold Fields School, which defines a series of transversal courses for all employees. These programmes are structured and focused on: organizational culture, self-leadership, interaction among others, communication among colleagues, technical and specialized training.

Leadership

Gold Fields also offers a Leadership Program, oriented to the growth of our employees, who are agents of change and professional development managers within their teams. Similarly, the company's Scholarship Program contributes to the professional progress of our personnel, offering the opportunity to pursue master's degrees, post graduate courses, specialization courses and university degrees. The program is launched each year, and the scholarship is co-financed by the company and the employee.

Concluding with the training matter, Gold Fields has a Feedback Program, which was implemented in 2013 as a model that includes a series of steps to carry out dialogue focused on growth. The model approach is based on a positive conversation but, at the same time, on an objective one, since it is grounded on the SBI technique: Describe the Concrete Situation; Describe the Observable Behaviours; Mention Impacts of these Behaviours.

On the other hand, to have a system of recognition implemented is also part of the evaluation to obtain the certification. Consequently, Gold Fields has the program "We Are Gold Worth", which aims to identify and recognize employees who live the corporate values and who are an example to their colleagues. Valued representatives are chosen every two months receiving a diploma, a pin and a voucher for purchases in supermarkets.

To be certified by ABE as a good employer is an important indicator of how personnel management is handled in Gold Fields; it also represents a great responsibility committing the company to promote this progressive compliance of human resources practices to its main suppliers.

Respect

This certification is the result of all company areas shared work, of leaders and employees who implement and respect the guidelines, methodologies and requirements of AMCHAM in order to qualify as an entrepreneurial partner. This indicates that one of the main values that identify Gold Fields is Respect.

With this certification, Gold Fields La Cima becomes part of the Association of Good Employers. A private initiative of social responsibility that seeks to ensure good labour practices with companies committed to comply with the established ABE human resources guidelines, and which also demand its major suppliers to comply with them, as well, to improve employment quality in the country that results in an increase of the domestic product.

ABE is a non-profit association, sponsored by AMCHAM, which affiliates companies recognized for respecting their personnel and which create a proper working environment.

Companies that are members of the Association have the firm conviction that motivated workers increase the companies' productivity levels, favour clients and consumers, encourage services quality and improve the country's productivity.

Gold Fields La Cima S.A.
www.goldfields.com.pe

EXSA: CREATING SUSTAINABLE SOLUTIONS

As leaders in solutions for rock fragmentation products and services in Peru, at EXSA we are committed to the protection and sustainability of the environment both across and throughout our entire value chain and stakeholder groups.

This commitment drives us to implement various strategies and innovations intended to promote long-term sustainable development. All of these initiatives are framed within a strong environmental policy based on the principles of prevention, compliance with applicable laws, sustainability and continuous improvement in operating efficiency.

This policy has materialized in EXSA's Sustainability Strategy, based on three major approaches and guidelines for the development of our actions:

- Processes and/or Products Eco-efficiency Approach
- "Neutral Carbon" Approach
- "Zero Useless Material" Approach.

Processes and/or Products Eco-Efficiency Approach

Environmental Management Monitoring and Instruments: The environmental management instruments that we apply in our three operating plants are an essential part of our value chain. Along this line, we conduct environmental assessments whenever an activity starts, or an existing activity is modified, so the environmental aspects and impacts associated with its development may be changed as required.

A Responsible Organizational Culture: To accomplish eco-efficiency in our processes and products, it is essential to have committed collaborators who are aware of current major environmental issues and of the role that industries play in sustainable development.

"Neutral Carbon" Approach

As a proactive company in the struggle against climate change, in 2012 we defined a strategy focused on reducing our emission of Greenhouse Effect Gases (GEG). The initiative includes goals of reduction through internal projects. The main goal is for EXSA to become, by 2015, a "Neutral Carbon" company, a role model for other companies in the sector.

We have been able to reduce the generation of 135 tonCO2/eq per production unit to 79 tonCO2/eq. In the future, we plan to develop a series of products, such as boiler fuel changes, waste reuse in alternative processes and the optimization of energy use based on the energy diagnosis conducted this year.

"Zero Useless Material" Approach

Effective Management of Solid Waste: We know that solid waste pose a major problem to Peru due to low recycling. Therefore, at EXSA we have implemented a segregation system at the sources of such waste and implemented differentiated collection sites for temporary storage of common, hazardous and recyclable waste.

Responsible Management of Natural Resources: As part of our "Zero Useless Material" approach, at EXSA we monitor our use of natural resources, such as water, electric power, fuel and paper, on a monthly basis, to collect the information required to maintain an efficient use of these elements.

As of this date, our main projects are:

- Changes to the emulsion process in Lima to reduce 40% of effluents.
- Project for treatment of domestic and industrial effluents for reuse.
- Continuous improvement at our plants to save water.

Eco-efficient Solutions

These 3 approaches, which enhance the sustainability of our value chain, ultimately result in the solutions that we provide our clients, which stand out as effective responses to their blasting requirements and provide them with a technology capable of reducing the environmental impact of these processes.

A recent example of the above is "Quantex", a new technology unique in Peru and the world, developed by Exsa's Research and Development Team, which contributes to remove nitrous gases (NOx) and reduce the Carbon Footprint in, compared with traditional open-pit mining explosives.

The Quantex technology marks an evolution in the rock fragmentation products market by fully avoiding the use of the traditional porous or low-density ammonium nitrate.

EXSA
www.exsa.net

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ROCK FRAGMENTATION SOLUTIONS

ENVIRONMENT – FRIENDLY SOLUTIONS

ISO 14001
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EXSA Peruvian leader in providing rock fragmenting solutions and a strategic partner in the conservation of the environment for its customers and the community focuses its efforts on eco-efficiency and carbon footprint reduction, both in its processes and in the development of its products.

Carbon footprint reduction
2012 to 2013
10%–

Carbon footprint reduction
2013 to 2014
15%–
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ANDEAN BEAR CONSERVATION

Mining company MKK explains how it aims to save the Andean bear from extinction.

The Andean bear is a threatened species. The forests in which it lives are fragmented, roads split its habitat, while agricultural lands encroach on its territories.

Livestock, illegal mining, and poaching are decimating its numbers, leading many environmentalists worried it is heading towards extinction.

It is rated as vulnerable by the International Union for Conservation of Nature (IUCN) and is listed in Appendix I of CITES, an international treaty drawn up in 1973 to protect wildlife against over-exploitation.

A mining company may seem an unlikely ally, but Minera Kuri Kullu (MKK) sees itself as an environmentally responsible organisation, and one that is committed to preserving the montane forest to save the Andean bear, thanks to the initiative of the Corporate Environmental Manager, Violeta Valenzuela and her team, and the invaluable support of the Executive Chairman of the Company, Diego Benavides.

We have decided to lead a community project aimed at restoring the bear's habitat in the Andes, and to help reduce poverty of the local community.

The project will also enhance forest cover in the region, helping to preserve trees that store vast quantities of carbon, which if released will contribute to global warming.

Our plan

MKK will work a biodiversity action plan with the rural community of Ollachea. Camera traps will be installed and also we will seek evidence to demonstrate the presence of bears. After this they will be evaluated alternatives to the classification of the area to preserve, to provide environmental services and strategies of community involvement.

We will aim to use the best practices through international cooperation agreements, creating an area of rescue bears from illegal captivity, and assess the possibility of being reintroduced to their habitat.

We will work with the community from the beginning, giving priority to the segment of youth and women, empowering them with internships in related institutions, sensitizing them on the sustainable management of biodiversity and the benefits it will provide with the ecosystem services inside the bear habitat.

We propose integrating areas with tourism potential, so people can watch the bear in its natural habitat, as well as bird watching and research studies of flora and fauna.

Continuous monitoring and reviewing indicators will help to make the necessary adjustments and share results with stakeholders.

The indicators we have set between 2014 and 2029 are as follows: A set percentage recovery of the mountain forest surface, a rise in the number of specimens of Andean bear and a boost in the employment rate of young women.

Kuri Kullu S.A. Mining Company (MKK)
www.minera-irl.com/en

Minera Kuri Kullu S.A.

Andean Bear (Tremarctos ornatus)
Photo: © Violeta Valenzuela - ACP Chaparri.

Panoramic view of the Ollachea Project and community.
Photo: © Courtney Chamberlain, CEO, Minera IRL SA.

Kuri Kullu S.A. Mining Company (MKK), a subsidiary of Minera IRL has the Ollachea Mining Project located in Puno, whose mining deposit is a gold system of an anorogenic type, inside of carbonaceous sediments metamorphosed in the Devonian era in the eastern escarpment of the Eastern Cordillera of the Andes.

MINEROS SA: MINING THAT RESPECTS THE ENVIRONMENT

Mineros SA is a private Colombian company with 40 years of experience in the mining sector dedicated to the exploration of gold and associated metals.

With extensive experience in the sector, the Mineros SA group has become a leading company in responsible mining in Colombia and Nicaragua.

The path Mineros has chosen allows it to implement innovative projects that improve exploration and exploitation processes in mining, reduce the negative impacts on the environment, and continue contributing to both the economic and social development of the countries involved.

Regional development

Over the years, social responsibility has become the backbone of companies that, as a central business concept, show a commitment to the economic growth of organisations and a permanent pledge to employees, their families and the community.

Such investments, which allow people to improve their quality of life, are a priority for the successful operation of a company.

Therefore, we at the Mineros SA group strongly believe in carrying out transparent and constant actions to support social development in communities influenced by our mining activities.

Our action plan is part of a social policy that aims to encourage development and contribute to a better quality of life and better opportunities in these communities.

It acts within a participative, organized, planned and concerted process along with promoters of development (society and government) so that local resources are used in a sustainable way and generate wealth, opportunities and social well-being.

The effectiveness of the actions of CSR depends on the focus that manages the group's policy of social responsibility.

With this in mind, the lines of action, intentions, and expected results can be defined, all based on a focused social model aimed at covering the principal needs of the areas where our mining operations take place.

At Mineros we understand that social responsibility is a voluntary commitment that goes beyond fulfilment of the legislation that regulates the sector, it is the premise on which our commitment to local communities and the environment is based.

Sustainable mining

Our environmental management program allows us to control all environmental issues generated during exploration and mining operations.

It enables us to revive affected areas and offer better environmental services to the communities in the regions where we operate, thereby setting the standard for responsible mining in the 21st century.

Our environmental recovery programs aim to return ecosystems to conditions of functionality and biodiversity such that the same environmental services may be offered throughout the region.

Using a sustainable development framework, they also endeavour to add greater value to new and alternative sectors in the communities

Photo © Mineros SA


Photo © Mineros SA

SOCIAL INTERVENTION MODEL OF MINEROS S.A.
Local governability
• Strengthening of the management of public administration for a greater transparency and better use and distribution of public resources. • Promotion of citizen participation through the methods established in the current legislation. • Encouraging credibility in the institutions involved and a greater commitment of citizens to their own development.
Environment model
• Rational management of natural resources. • Development of clear production technology. • Strengthening of municipal environmental management and rural development in areas damaged by mining. • Encouragement for local authorities to develop programs of basic sanitation such as the distribution of drinking water, the effective management of waste and the creation of public awareness.
Social development
• Helping to improve the quality of life of the communities involved, through improvement in public health and quality of education.
Economic development
• Supporting new opportunities that allow the diversification and emergence of initiatives of small and family businesses. • Generation of local employment in areas influenced by the projects. • Future payment of taxes and royalties for gold production. • Revitalization of the local economy by providing services and supplies to the company and its contractors.

present in our area of influence. As a result of this new environmental culture, these communities will feel a long term benefit.

Our socio-environmental management is present in all the production activities that we undertake.

Therefore, using the characteristics of the mining sector as a base, we aim to prevent, compensate and mitigate any possible negative impacts so that the activities we carry out now do not compromise future generations. With our environment strategies, we will make a daily commitment to protect biodiversity, preserve human well-being and use renewable resources as efficiently as possible.

The mining sector requires its actions to be brought together in such a way that, in a framework of social and environmental policy backed up by concrete executions, it can demonstrate that clean mining committed to the development of local communities is possible.

Responsible mining is possible, and we are doing it!

Mineros SA
www.mineros.com.co

MINEROS S.A.
Minería responsable del siglo XXI

Photo © Mineros


Photo © Mineros SA

Responsible mining **is possible,** and we are doing it

MINEROS S.A.

Responsible mining for the XXI[st] Century


RIO CONVENTIONS CALENDAR 2015









UNCCD
United Nations Convention to Combat Desertification

Convention on Biological Diversity

United Nations
Framework Convention on Climate Change