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Cover photo: Children in Vanuatu

Photo: © Blake Stogner

(United States Peace Corps Volunteer)



Children in Vanuatu

Implications for the Pacific

Tom Roper discusses the situation of vulnerable Pacific islands and considers action that energy utilities can take in these countries

The world's 51 Small Island Developing States (SIDS) and Territories are amongst the most vulnerable to the impacts of climate change despite the fact that they contribute almost nothing to the growth of global greenhouse emissions - less than 0.02 per cent.

They are characterized by small populations, limited resources, lack of economies of scale and financial and technical resources, remoteness, a susceptibility to natural disasters and are highly dependent on and vulnerable to international trade. The pressures of climate change, particularly sea-level rise and extreme weather events, add to often already stressed social and environmental conditions.

In this article, I'll be examining the most recent climate change assessments, probing SIDS' vulnerability, explaining why electric utilities matter, suggesting new energy in-

vestment possibilities and urging immediate action.

At last the public argument about whether climate change is real or fiction has been resolved. Climate change is a threat to humankind's future. Al Gore's movie, Nicholas Stern's review, the latest Intergovernmental Panel on Climate Change (IPCC) report and Hurricane Katrina have all moved the debate to the conclusion that

MAIN POINTS

- **The author considers** the role of energy utilities in Pacific island nations.
- **Energy utilities are major players** in island economies, enabling industry development, improved lifestyles and a higher standard of living.
- **It is concluded that** utilities must be a key element in climate change plans, promoting energy efficiency and renewable energy technologies.

urgent action is overdue and must be taken immediately.

In February 2007, the IPCC Chair, Rajendra Pachauri, said: "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level."

The IPCC Working Group III found climate change "to be irreversible over human time scales, and much of the damage... likely to be irreversible even over longer time scales" (2007 report, chapter 1, page 9). Carbon dioxide concentrations have increased by more than a third since the 19th century and will continue to grow. Growth rates have actually increased significantly over the past decade. By 2100, temperature rises could be as high as six degrees Celsius.

Harvard University's Professor of Environmental Policy, John Holdren, newly-

appointed director of the Office of Science and Technology Policy in the Obama White House, says that “the United Nation’s goal of avoiding dangerous human interference is already out of reach,” that the “current level of interference is dangerous,” and that “the issue is whether catastrophic interference is avoidable.”

Potential impacts are increased temperatures, sea-level rise, extreme events and changes in precipitation. These impacts directly affect many sectors:

- health - infectious and respiratory diseases and heat stress;
- agriculture - lower crop yields and irrigation demands;
- forest - composition, health and productivity;
- water resources - supply and quality;
- coasts - inundation, erosion, loss of coral and mangroves; and,
- species and natural areas - loss of habitat and species.

Rachel Warren, from the Tyndall Centre in the United Kingdom, highlights an 80 per cent loss of coral reefs with a one degree Celsius rise. Coral reefs and mangroves provide coastal defenses, encourage fishing and promote tourism. Coral is under threat with higher water temperatures, and in July 2006 the United Nations Environment Programme reported that over half of the Pacific mangroves could be steadily lost.

Estimates of sea-level rise have varied over time and between computer models. The

recent IPCC report, for example, suggested a rise of up to 50cm as a result of thermal expansion and melting glaciers. Stefan Rahmstorf of Potsdam University in Germany suggests a metre this century. Standing on a Marshall Islands atoll, a metre rise would see almost total immersion.

Speaking at a United Nations Framework Convention on Climate Change meeting in February 2007 in Jamaica, Graham Sem of Sustainable Environmental Management Ltd in Auckland, New Zealand, said that a 50cm rise would result in a loss of up to 60 per cent of beaches in some areas. Most economic and social activity in small islands is within two metres of sea level and more than half the population of Small Island States live within 1.5kms of the shore.

In July 2007, Vaitoto Tupa, head of the Cook Islands National Environment Service, wrote in *Tiempo* that sea-level rise “could be devastating for the Cook Islands as all our

“Storm and flood numbers doubled over the 20 years to 2000. The Red Cross estimates that more than 200 million people are affected annually”

population is dependent on the coastal areas in one way or another.”

The results for SIDS, according to the latest IPCC Summary for Policy Makers, are:

- deterioration in coastal conditions through erosion of beaches and coral bleaching which will affect local resources;

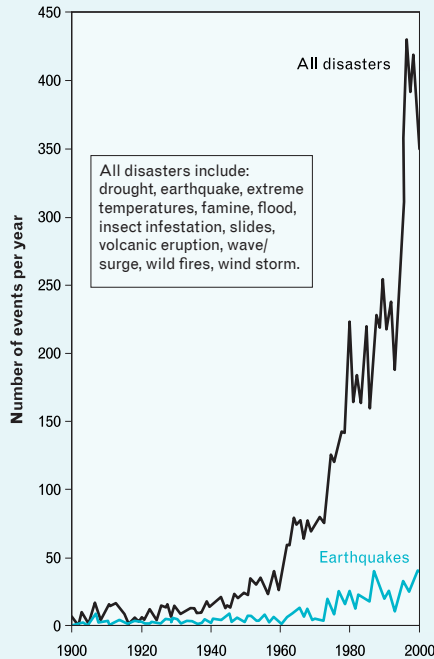
- exacerbation of inundation, storm surge, erosion and other coastal hazards, threatening vital infrastructure, settlements and livelihoods;
- by mid century, water resources reduced to where they are insufficient to meet demand during low rainfall periods; and,
- with higher temperatures, increased invasion by non-native species and diseases.

Storm and flood numbers doubled over the 20 years to 2000 (see the figure opposite). The Red Cross estimates that more than 200 million people are affected annually. The cost of extreme weather events in the Pacific in the 1990s exceeded US\$2 billion. Cyclones accounted for 76 per cent of reported disasters between 1950 and 2004, followed by earthquakes, droughts and floods. According to a World Bank finding in 2006, cyclones cost an average of US\$75.7 million per cyclone at 2004 values. Damage in some cases has exceeded the national Gross Domestic Product of coun-

tries such as Samoa in 1990/1 and Niue in 2004. In April 2004, Cyclone Sudal destroyed or damaged 90 per cent of homes in Yap.

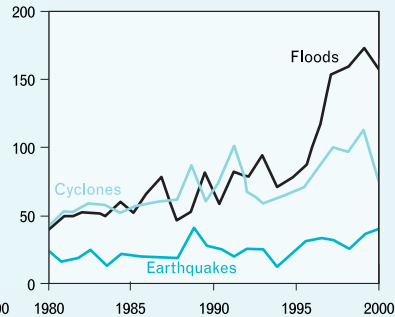
Global warming may not result in more cyclones, but it is likely that they will become more powerful (perhaps by 10 per cent), produce greater rainfall (20 per cent more),

TRENDS IN NUMBER OF REPORTED EVENTS



Much of the increase in the number of hazardous events reported is probably due to significant improvements in information access and also to population growth, but the number of floods and cyclones being reported is still rising compared to earthquakes. How, we must ask, is global warming affecting the frequency of natural hazards?

Earthquakes versus climatic disasters



Source: UNEP-GRID

higher storm surges and greater human and infrastructure damage. Their power is influenced by warmer water, and storm strength could increase by half a category. For instance a mid category 4 storm would become category 5 - from wind speeds of 229 to 253 kilometres per hour.

Storm surges present an often greater threat with waves in recent cyclones 12 metres higher than normal levels. Model-based studies suggest that, by the year 2080, the number of people flooded by these “super storm surges” will be more than five times higher than present. The islands of the Caribbean and the Indian

and Pacific Oceans face the largest relative increase in flood risk, with the number of people at risk being some 200 times higher than in most other parts of the world.

The Tuvalan people are already discussing resettlement and refugee status. Papua New Guinea’s Carteret islanders are the first direct climate change refugees with islands inundated and damaged, gardens and water supplies destroyed by salt water intrusion and evacuation announced in 2005.

Can the Small Island States be defended? Island people and communities have been resilient in the face of disasters but that capacity is now being undermined. National plans for the inevitable threats include the “soft” measures of conserving natural sea defenses, such as the mangrove, and the “hard” approach of moving and strengthening infrastructure.

Espen Ronneburg of the South Pacific Regional Environment Programme points out that the “costs of overall infrastructure and settlement protection is a significant portion of Gross Domestic Product well beyond the means of SIDS.” In 2004, a World Bank report concluded that Kiribati’s Tarawa Atoll could face annual climate change damages between US\$8 and US\$16 million, from a Gross Domestic Product of US\$50 million. Periodic storm surges could inundate 55 to 80 per cent of the land in North Tarawa.

One of the first actions, even if symbolic, in response to the climate threat is for Small Island States to reduce their own emissions,

tiny though they are, to set an international example. And reducing emissions is likely have significant local benefits in terms of financial savings.

Utilities are major players in island economies, enabling industry development, improved lifestyles and a higher standard of living. A badly run or ill-prepared utility damages the economy, destroys opportunities and penalizes the less well off. Utilities must be a key element in national development and climate change plans and promote energy efficiency and renewable energy technologies.

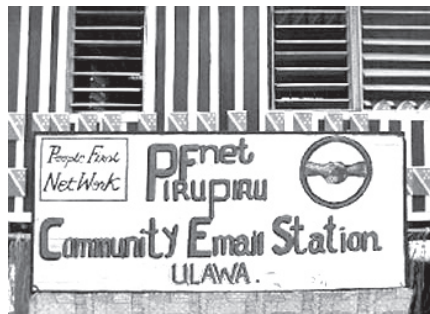
As Tuiloma Neroni Slade, former chairman of the Alliance of Small Island States (AOSIS) and Ambassador of Samoa to the United Nations, said: "The Small Island States can by promoting a clean energy environment set an example for the rest of the world. Too much of our national budgets are spent on fossil fuels for diesel generation of electricity. This is a drain on our national budgets and does not work towards a solution to the problems of climate change. When the tanker comes in the foreign reserves go out."

The starting point is to look at everything utilities do. For many utilities, the losses from generation and transmission are an unacceptable 20 per cent or more. If they were halved the diesel requirement would drop by one gallon or litre in ten. Prices have gone up by more than 250 per cent since 2001, with fuel imports taking up more than half the

value of exports. These are countries working hard just to meet the fuel bill. We urgently need to benchmark performance and document and adopt best practice.

The fuel used can also change. UNELCO, the power supplier in Vanuatu, has experimented successfully with local coconut oil for one of its generators. New capacity will be specifically adapted for coconut oil and a target of 30 per cent set for 2010 - a real balance of payments boost.

Renewable energy can also play its part. Clean non-greenhouse producing power sources include photovoltaics, solar hot water, wind turbines and hydro. Although, unfortunately, we still do not have enough examples, they are increasing. For example, a grid-connected solar array in Tuvalu has been provided by the company E8 and cyclone-resistant wind turbines have been installed in New Caledonia.



Community email station, Ulawa, Solomon Islands

The Solomon's is a leader, particularly at the village level, with solar-powered Australia and New Zealand Bank automated teller machines (ATMs). Community email stations, schools and resorts are also relying on the sun.

Equally important is working with customers to reduce their power use. At a cost of 25 US cents per kWh or more, energy efficiency can assist customers by reducing their bills and the utility by decreasing fuel use.

The Marshalls Energy Company is installing 10,000 energy-efficient compact fluorescent lamps, arranged by the Climate Institute and provided by Climate Care.

Improved utility performance should be combined with working with customers to reduce their consumption. This is most vital in the poorest countries where unnecessary power plant investments to run inefficient equipment divert scarce capital from basic needs such as access to electricity and clean water. Appliances are also far more likely to be wasteful.

Key features of such "demand side management" programmes include compact and high-efficiency fluorescent lighting, refrigerator and air conditioner labeling and standards, commercial refrigeration and air conditioner equipment maintenance, energy audits, street lighting, solar hot water and interruptible and time of use tariffs.

To be in a position to take up these opportunities, Pacific nations must get a fair share of aid, loans and technical assistance. The

Aspirations

Pacific island governments might consider the following goals:

- introduce 25 per cent renewable energy targets;
- improve existing diesel generation and transmission efficiency by 20 per cent;
- reduce oil use for transportation by 20 per cent;
- set efficiency targets for motors, air conditioning, appliances and lighting;
- reduce energy consumption in public offices and buildings by 10 to 15 per cent immediately; and,
- at least double village and outer island access to electricity.

World Bank, in 2005, admitted that Pacific member countries receive less than a quarter of that provided in the Caribbean. Aid distribution from all donors has concentrated on the social sectors with only five per cent going to energy and this mostly from Japan. This is surprising given that 70 per cent of Pacific islanders don't have access to electricity.

A partial remedy is the recently announced World Bank, International Finance Corporation and Australia and New Zealand Bank's Sustainable Energy Finance Project. The project has the potential to bring cheap reliable electricity so that Pacific Islanders can have light at night, listen to the radio, run a small refrigerator and, at the same time, use power sources that are environmentally-sound and sustainable. It is being imple-

mented in Papua New Guinea, the Solomon islands, Vanuatu, Fiji and the Marshall islands - but this leaves out a lot of Pacific islands.

The Pacific nations face huge challenges and threats from climate change. At the same time as tackling these problems, they can improve their own communities. However, the real work of first slowing, then stopping, global warming has to be done by the big emitters, led by the developed countries which have been pouring carbon dioxide into our atmosphere for 150 years. We can't stop the extra heat, sea-level rise and weather extremes that are already in the pipeline and will get much worse over the next 50 years. But we must make a start.

Former French President Jacques Chirac made it crystal clear: "Soon will come the day when climate change escapes all control. We are on the verge of the irreversible. Faced with this emergency, the time is not for half-measures. The time is for revolution: a revolution of our awareness, a revolution of the economy, a revolution of political action. We are the last generation that can save our planet." ■

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FURTHER INFORMATION

- **On the Web:** Tom Roper expands on the energy issues discussed in this article in *The Cheapest Kilowatt: The Lessons of Energy Efficiency*, available at www.tinyurl.com/9rndez (0.3Mb download). The *Tiempo Climate Cyberlibrary* lists relevant websites on Small Island States at www.tinyurl.com/8quuvb and on alternative energy at www.tinyurl.com/9g8mls.

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Indus Basin water resources

Agha Ali Akram advocates demand management for optimal adaptation to changes in water resources in the Indus Basin resulting from climate change

The Indus Basin is a very developed watershed, with considerable physical infrastructure and many users who depend on its hydrological cycles and balances. Amongst the users, the irrigation system is the largest one and in many ways the most complex and significant. Pakistan's agriculture largely depends on it.

The near future will see the hydrological balance of the Indus Basin shift as the global climate changes. Current predictions indicate that the Indus Basin will become 'flashier' with a wetter wet season and a drier dry season, along with a reduction in the snowpack that the Basin relies on for a year-round supply of water.

Water management in Pakistan needs to adapt to climate change and the Indus Basin is no exception. Beyond recognizing climate change as a real force for change in the Basin, it is essential to consider the kinds of adaptive strategies available to water managers. One

of these is demand management. Traditional approaches to water management in the Indus Basin have focused on increasing supply and tend to be engineering-oriented. Demand management, however, is an attractive alternative, though like any adaptive strategy it will have to overcome certain challenges that are intrinsic to the Pakistani setting.

The Indus Basin

In terms of water usage in Pakistan, domestic uses account for two per cent, industrial for two

MAIN POINTS

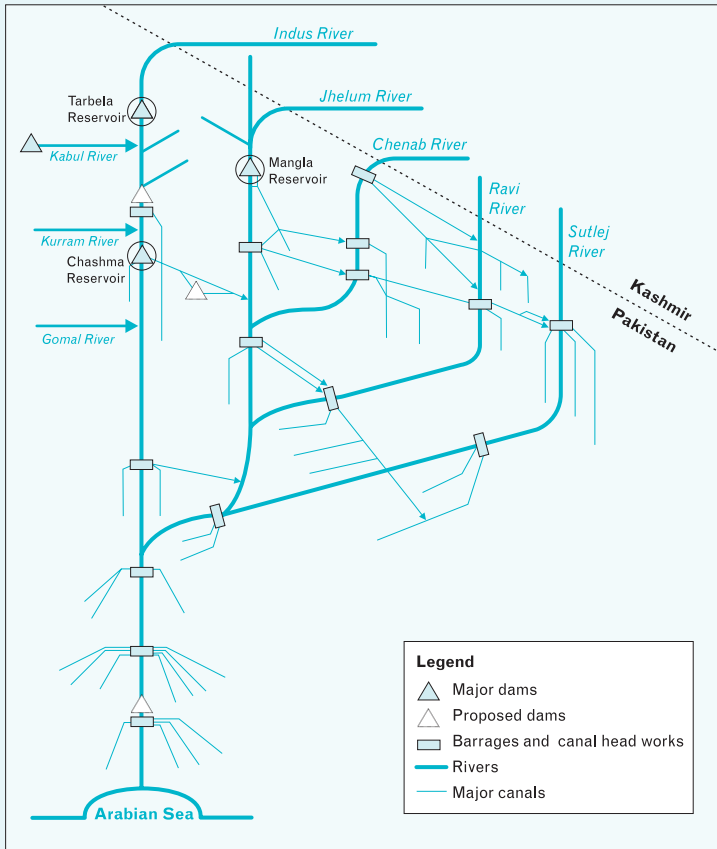
- **The author describes** what changes to water resources in the Indus Basin, Pakistan, could occur as a result of climate change.
- **Special reference is made** to agriculture and irrigation, as this is the dominant use of water in Pakistan.
- **He advocates** demand management as a means of adapting to the changes ahead.

per cent and agriculture for a staggering 97 per cent of water usage. This is well above the global average of about 70 per cent.

The Indus Basin is a very developed watershed in that it has a lot of storage and management infrastructure. The schematic diagram on the following page shows the major rivers, canals, dams and other works of the Indus Basin irrigation system. Tarbela, Mangla and Chashma are the three primary reservoirs on this system. Tarbela is the first regulation device on the Indus and Pakistan's largest storage device with 10.93 billion cubic meters of storage capacity.

Water from the Indus empties onto the plains through regulatory structures known as rim stations. About 173 billion cubic metres pass through the rim stations, about 128 billion cubic metres of which is diverted for irrigation. But this figure is still insufficient to meet agricultural irrigation requirements, and the shortfall of about 40 per cent is made up from groundwater pumping. The associated canal

SCHEMATIC DIAGRAM OF THE INDUS BASIN IRRIGATION SYSTEM



network is massive, with 43,561 kilometres of canals, 18,884 kilometres of seepage/storm water drains and 12,612 kilometres of tile drains, mostly in the Indus Plain provinces of Punjab and Sindh. This system of reservoirs and canals forms the basis of the Indus Basin irrigation system and is thus absolutely essential to agriculture.

Expected changes

As the Indus Basin's hydrology is affected by climate change, the irrigation system will have to adapt. Expected changes include the following.

Some climate models predict precipitation changes ranging from -20 per cent to +20 per cent for the upper Indus Basin and -20 per cent to +30 per cent in the main system. Temperatures will increase too, with warming averaging 2.0 to 4.7 degrees Celsius in the upper basin and 2.0 to 3.6 degrees Celsius in the main system.

Higher temperatures could increase evaporation leading to drier soils. This, however, may be compensated for by higher precipitation and higher runoff from snowmelt.

The Indus Basin will see increased runoff due to increased glacial melt. In essence, Pakistan will 'mine' its glacial water over the next few years, as higher temperatures melt more of the glaciated north and less precipitation falls as snow during the winter months.

The Indus Basin climate is dominated by the South Asian Monsoon, which is poorly

simulated by Global Circulation Models. In some extreme predictions, the South Asian Monsoon shuts down completely. Perhaps more realistically, increasing precipitation and temperatures could lead to a higher intensity monsoon.

Finally, glacial basins like the Indus will see an increase in snowmelt continuing until later in the year. Most of the increases in this runoff will occur between September and April. Some studies estimate that runoff will increase by about 5 per cent, but predictions range from -19 per cent to +18 per cent.

Climate change: a lack of recognition in the Indus Basin

Given the likely shifts in Pakistan's hydrometeorology as the global climate changes, it is important that Pakistan's water management agencies look to develop adaptive strategies that can effectively manage water in light of climate change. Interviews with officials in water management agencies such as the Water Management Cell at the federal level and the Water and Sanitation Authority of Lahore at the city level made it abundantly clear, however, that climate change was not on their planning horizons. Governments realize that there are already shortfalls in supply and that with a growing population these shortfalls may be exacerbated. But the potential of climate change to alter the hydrological balance that Pakistan relies on is not recognized.

In Lahore, for instance, a simple and perhaps short-sighted policy of water supply

expansion is being followed: the guiding philosophy seems to consist of installing more groundwater pumping stations to increase supply to various localities. It appears that no consideration is being paid to the costs of the programme, the balance between extraction and aquifer recharge (especially with potential changes due to climate change) or the potential for toxicity (arsenic in geological formations and seepage of industrial pollutants). This strategy ignores the potential of climate change and is also questionable in terms of the sustainability of the reservoir that Lahore relies on.

At the national level, the Pakistani government's long-term water strategy document - the Water Resources and Hydropower Development Vision 2025 - lays out a plan to address shortfalls in supply. The strategy focuses on creating additional storage capacity through reservoirs. This is unsurprising given that national government perspectives on water management are still very much dominated by the engineering-oriented, physical infrastructure-focused solutions of the first two-thirds of the twentieth century. These traditionally focused on building dams, reservoirs, wells and pumps. Committing to more physical infrastructure that may or may not be effective as the climate changes is, however, a costly and risky proposition.

Demand management

One potentially effective way to adapt water resource management is through demand

management. Demand management looks to better use and allocate any given amount of water through institutional and price mechanisms. It avoids the gamble of committing to large financial and capital investments for physical infrastructure that may not be suited to future climatic conditions.

For effective demand management, however, it is essential to define the correct price for water and introduce effective institutional arrangements to manage demand for water. There are several institutional arrangements for water demand management and water sharing, which include: water lease, where a specific quantity of water is paid for over a specified period of time; water banking, where water rights are 'pooled' for rental by users through an agreed third party; and the scheme used in the Australian state of Victoria, where water shares are defined as a share of reservoir water (rather than a set volume), and the reservoir is seen as a bank with an operator who acts like a banker, debiting and crediting amounts from the user's allocation. Along with an effective institution, demand management requires an accurate estimation of water price and demand. Water is often a non-market good or is massively subsidized. However, for effective demand management, the correct price of water needs defining.

Whilst demand management supports optimal water usage by better allocating a scarce resource, it does not create more water. Demand management strategies can be applied to all water use sectors - domestic, industrial

and agricultural – and there are major savings to be made in the agricultural sector because agriculture is the biggest water using sector and also the most inefficient. Water use and allocation in irrigation systems in the developing world is typically determined by behavioural as well as engineering issues.

Demand management in Pakistan

As almost 97 per cent of Pakistan's available water resources are used by the agriculture sector, applying demand management could secure significant gains. There are, however, several issues that would need to be understood and tackled first. If these hurdles are not properly addressed, farmers, and smallholders in particular, could lose out.

Firstly, there is an entrenched rural agricultural elite, which has traditionally benefited from privileged access to water and tends to perceive institutional reform in irrigation as a threat. Whilst smaller less powerful farmers need to be on board, cooperation with more influential farmers will be needed to avoid proposals being vetoed.

Secondly, it is important to get the demand for and the price of water right. To date, agencies in Pakistan have made little effort to investigate this. It is often difficult to estimate water quantities used for irrigation and water rarely has explicit prices associated with it, but effective demand management requires investigation into consumers' need for water and the value they place on it. Both are complicated economic concepts. It is also essen-

tial that the price does not deny poorer farmers water. Fair allocation is essential so pricing needs to balance equity with efficiency.

Thirdly, there is the issue of administrative competence. Even if the various agencies responsible for water management in the Indus Basin irrigation system did seriously consider demand management as a strategy, its effective implementation would still be questionable. There is no measure for incompetence, but if corruption can serve as a proxy for government ineptitude then Pakistan is in considerable trouble with an overall rank of 142 out of 163 countries in terms of perceived corruption. This may mean smaller poorer farmers lose out if larger farmers are favoured by a corrupt administration.

Finally, agriculture and agricultural water demand in Pakistan is complex and varied. Pakistan has twelve distinct agro-ecological zones each with their special climatic, soil and hydrological conditions. Any pricing mechanism would need to account for this variation in water scarcity. Acquiring, storing and transporting water in different areas would have different costs and the eventual price of water would need to reflect this. Again, equity needs to be addressed here, and measures must ensure that less powerful smallholder farmers do not lose out. ■

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Greenhouse development rights

Sivan Kartha describes an innovative scheme for allocating emissions targets that preserves development priorities

Awarming of two degrees Celsius over pre-industrial temperatures has been widely endorsed as the maximum that can be tolerated or even managed. Yet even as the emerging science increasingly underscores how extremely dangerous it would be to exceed two degrees, many people are losing all confidence that today's inertial, politics-bound societies will be able to prevent such a warming. Our quite different conclusion is that the two degrees Celsius line can indeed be held, but that doing so demands a sharp break with politics as usual. Carbon-based growth is no longer a viable option in either the North or the South, so we set out to assess the problem of rapid decarbonization in a world sharply polarized between North and South and, on both sides, between rich and poor.

As the figure on the following page shows, even if the industrialized nations undertake

bold efforts to virtually eliminate their emissions by 2050, the carbon budget that would remain to support the South's development remains alarmingly small. Developing country emissions would still have to peak only a few years later than those in the North - before 2020 - and then decline by nearly six per cent annually through 2050. This would have to take place while most of the South's citizens were still struggling in poverty and desperately seeking a significant improvement in

MAIN POINTS

- **The author argues that** it is possible to preserve development priorities while curbing climate change.
- **The Greenhouse Development Rights framework** places responsibility

with those able to bear the burden, wherever they live.

- **The framework tests** the willingness of the industrialized countries to step forward and offer an equitable share.

their living standards. It is this last point that makes the climate challenge so daunting. For the only proven routes to development - to water and food security, improved health care and education, and secure livelihoods - involve expanding access to energy services, and, given today's inadequate, expensive, low-carbon energy systems and the South's limited ability to afford them, these routes inevitably threaten an increase in fossil fuel use and thus carbon emissions. From the South's perspective, this pits development squarely against climate protection.

With even with the minimal Millennium Development Goals being treated as second-order priorities, the developing countries are quite manifestly justified in fearing that the larger development crisis, too, will be treated as secondary to the imperatives of climate stabilization. The level of international trust is very low indeed and, all told, the situation invites global political deadlock. De-

spite progress at the margins, the climate negotiations are moving far, far too slowly. It is unlikely that we will be able to act, decisively and on the necessary scale, until we openly face the big question: What kind of a climate regime can allow us to bring global emissions rapidly under control, even while the developing world vastly scales up energy services in its ongoing fight against endemic poverty and for human development?

The development threshold

Development is more than freedom from poverty. The real issue is a path beyond poverty to dignified, sustainable ways of life, and the right to such development must be acknowledged and protected by any climate regime that hopes for even a chance of success. Accordingly, the Greenhouse Development Rights framework (GDRs), which has been developed by the Stockholm Environment Institute and EcoEquity, is designed to protect the right to sustainable human development, even as it drives rapid global emission reductions. It proceeds in the only possible way, by operationalizing the official principles of the United Nations Framework Convention on Climate Change (UNFCCC), according to which states commit themselves to “protect the climate system... on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.”

As a first step, the GDRs framework codifies the right to development as a ‘develop-

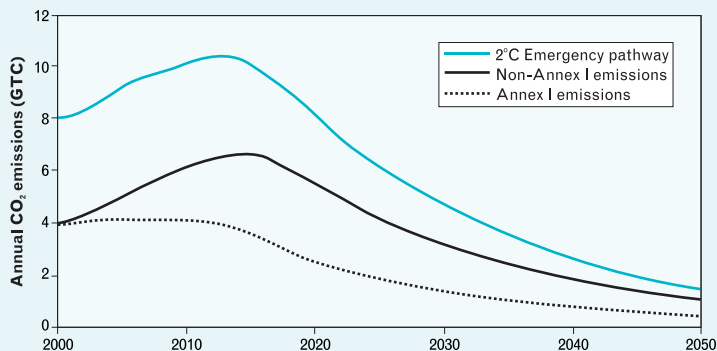
ment threshold’ - a level of welfare below which people are not expected to share the costs of the climate transition. This threshold, please note, is emphatically not an ‘extreme poverty’ line. Rather, it is set to be higher than the global poverty line, to reflect a level of welfare that is beyond basic needs but well short of today’s levels of affluent consumption.

People below this threshold are taken as having development as their proper priority. As they struggle for better lives, they are not

similarly obligated to labour to keep society as a whole within its sharply limited global carbon budget. People above the threshold, on the other hand, are taken as having realized their right to development and as bearing the responsibility to preserve that right for others. Critically, these obligations are taken to belong to all those above the development threshold, whether they happen to live in the North or in the South.

The level where a development threshold would best be set is clearly a matter for

THE EMISSIONS SPACE FOR DEVELOPING COUNTRIES



Key:

- The blue line shows a two degrees Celsius emergency pathway, in which global carbon emissions peak in 2013 and fall to 80 per cent below 1990 levels in 2050.
- The dotted line shows Annex I emissions declining to 90 per cent below 1990 levels in 2050.
- The black line shows, by subtraction, the emissions ‘space’ that would remain for the developing countries.
- Note, even this extraordinarily ambitious global trajectory presents a 15-30 per cent chance of exceeding 2 degrees Celsius temperature rise.

debate. We argue that it should be at least modestly higher than the global poverty line, which is derived from an empirical analysis of the income levels at which the classic plagues of poverty - malnutrition, high infant mortality, low educational attainment, high relative food expenditures - begin to disappear or, at least, become exceptions to the rule. We take a figure 25 per cent above the global poverty line of \$16 a day (purchasing power parity adjusted) for our indicative cal-

culations, which are, therefore, relative to a development threshold of \$20 per person per day (\$7,500 per person per year). This income also reflects the level at which the southern 'middle class' begins to emerge.

Capacity, responsibility and national obligations

Once a development threshold has been defined, capacity and responsibility can be identified, and these can then be used

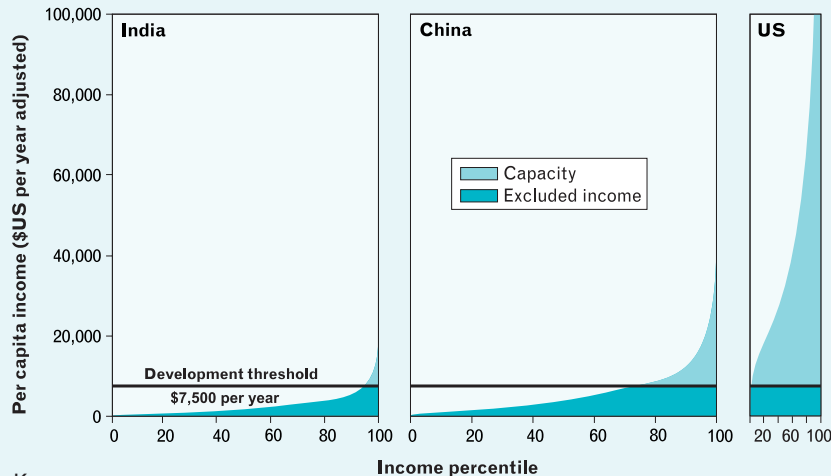
to calculate the fraction of the global climate burden that should fall to any given country.

Capacity is income not demanded by the necessities of daily life, and thus available to be 'taxed' for investment in climate mitigation and adaptation and can be straight-forwardly interpreted as total income excluding income below the development threshold. This is illustrated in the figure on this page, which shows the development threshold as it crosses the national income distribution lines and splits their populations into a poorer portion (to the left) and a wealthier portion (to the right). This crossing makes it easy to compare both the heights of wealth and the depths of poverty in different countries, and also graphically conveys each country's capacity (the paler blue area), which we define as the income that the wealthier portion of the population has above the development threshold.

A nation's aggregate capacity, then, is defined as the sum of all individual income, excluding income below the threshold. Responsibility, by which we mean contribution to the climate problem, is similarly defined as cumulative emissions since 1990, excluding emissions that correspond to consumption below the development threshold. Such emissions, like income below the development threshold, do not contribute to a country's obligation to act to address the climate problem.

Thus, both capacity and responsibility are defined in a manner that takes explicit

CAPACITY - INCOME ABOVE THE DEVELOPMENT THRESHOLD



Key:

● These curves approximate income distributions within India, China and the United States. The paler blue areas represent national incomes above the \$20 per person per

day development threshold. Chart widths are scaled to population, so these capacity areas are correctly sized in relation to each other. Based on projected 2010 data.



Traffic in Delhi

Photo: © Kevin Hicks/SEI

account of the unequal distribution of income within countries. This is a critical and long-overdue move, because the usual practice of relying on national *per-capita* averages fails to capture either the true depth of a country's developmental need or the actual extent of its wealth. These measures of capacity and responsibility can then be straightforwardly combined into a single indicator of obligation, in a Responsibility Capacity Index (RCI). This calculation is done for all Parties to the UNFCCC, based on country-specific income, income distribution and emissions data. The precise numerical results depend, of course, on the particular values chosen for key parameters,

such as the year in which national emissions begin to count toward responsibility (we use 1990, but a different starting date can certainly be defended) and, especially, the development threshold. The results also evolve over time; the global balance of obligation in 2020, or 2030, can be expected to differ considerably from that which exists today. Beyond that, the values of specific parameters can be easily adjusted and should certainly be debated; all of them, of course, would have to be negotiated.

What's most important is that the GDRS framework lays out a straightforward operationalization of the United Nations' official differentiation principles, and that it does

so in a way that protects the poor from the burdens of climate mobilization.

Indicative calculations

Our indicative calculations are by no means definitive, but they are instructive. Looking at just the 2010 numbers in the table on the next page, they show that the United States, with its exceptionally large share of the global population of people with incomes above - and generally far above - the \$20-per-day development threshold (capacity), as well as the world's largest share of cumulative emissions since 1990 (responsibility), is the nation with the largest share (33.1 per cent) of the global RCI. The European Union follows with a 25.7 per cent share; China, despite being relatively poor, is large enough to have a rather significant 5.5 per cent share, which puts it even with the much smaller but much richer country of Germany. India, also large but much poorer, falls far behind China with a mere 0.5 per cent share of the global RCI. These are the shares of the costs of the global program of both mitigation and adaptation that each country would be obliged to bear.

These results are striking for two reasons. First, they acknowledge the emergence of a consuming class in the developing world, and calculate its capacity and responsibility to be rather significant. Indeed, nearly one-quarter (23 per cent in 2010) of the total global obligation is assigned to developing countries, and looking toward 2030, this portion continues to grow. This is most evident

RESULTS FOR REPRESENTATIVE COUNTRIES AND GROUPS

	2010				2020		2030
	Population (percent of global)	GDP per capita (\$USPPP)	Capacity (percent of global)	Responsi- bility (percent of global)	RCI (percent of global)	RCI (percent of global)	RCI (percent of global)
EU27	7.3	30,472	28.8	22.6	25.7	22.9	19.6
EU15	5.8	33,754	26.1	19.8	22.9	19.9	16.7
EU+12	1.5	17,708	2.7	2.8	2.7	3.0	3.0
UnitedStates	4.5	45,640	29.7	36.4	33.1	29.1	25.5
Japan	1.9	33,422	8.3	7.3	7.8	6.6	5.5
Russia	2.0	15,031	2.7	4.9	3.8	4.3	4.6
China	19.7	5,899	5.8	5.2	5.5	10.4	15.2
India	17.2	2,818	0.7	0.3	0.5	1.2	2.3
Brazil	2.9	9,442	2.3	1.1	1.7	1.7	1.7
SouthAfrica	0.7	10,117	0.6	1.3	1.0	1.1	1.2
Mexico	1.6	12,408	1.8	1.4	1.6	1.5	1.5
Least Devel- oped Countries	11.7	1,274	0.1	0.04	0.1	0.1	0.1
Annex I	18.7	30,924	75.8	78.0	77	69	61
Non-annex I	81.3	5,096	24.2	22.0	23	31	39
High-income	15.5	36,488	76.9	77.9	77	69	61
Middle-income	63.3	6,226	22.9	21.9	22	30	38
Low-income	21.2	1,599	0.2	0.2	0.2	0.3	0.5
World	100	9,929	100	100	100	100	100

Key:

- Percentage shares of total global population, GDP, capacity, responsibility, and Responsibility Capacity Index (RCI) for selected countries and groups of countries.

- EU27=current membership of the European Union (EU). EU15=membership of the EU prior to May 2004. EU+12=new members since May 2004. PPP=purchasing power parity adjusted.

- Based on projected emissions and income for 2010, 2020, and 2030. High-, middle-, and low-income country categories are based on World Bank definitions as of 2006. Projections based on International Energy Agency World Energy Outlook 2007.

in China's projected share of the total obligation, which nearly triples over two decades (from 5.5 per cent in to 15.3 per cent), reflecting an extremely rapidly growing economy and an increasing number of Chinese people who are projected to enjoy incomes above the development threshold. Once the industrialized countries have fulfilled their obligation to "take the lead" (in the words of the UNFCCC), it will be reasonable to expect the developing world to likewise start bearing its burden.

The second – and more dramatic – implication is for the industrialized world, which carries the vast majority of the global obligation and will continue to do so well into the future. It goes without saying that the industrialized world must invest in radically mitigating its own emissions. But, ultimately, it is in the developing world where most mitigation must happen, since this is where most emissions now occur and where emissions are growing most rapidly. (The same may be said of adaptation.) Thus, the industrialized world, to carry its legitimate share of the climate burden, must fulfill a two-fold obligation:

- it must drive extraordinarily ambitious domestic reductions, and thus free up enough environmental space for the poorer countries to develop; and,
- it must drive equally ambitious international efforts – via technological and financial support – to enable this development to occur along a low-emission, high-adaptation path.

Admittedly, this will be seen as a dangerous idea. It plainly illustrates that a climate regime that preserves a right to development – the only kind of climate regime that is politically viable – calls upon industrialized countries to do far more than they have yet signaled a willingness to do. It also suggests that the only possible way to build a consensus in the industrialized countries to honor a right to development and to bear their fair share of the global climate burden is for the consuming classes in the developing world to also bear their fair share. The alternative is a weak regime with little chance of preventing a climate catastrophe.

But it is also a liberating idea. It defines and quantifies national obligations in a way that explicitly safeguards a meaningful right to development. It accepts the developing country negotiators' claim that they can only accept a regime that protects development, and just as importantly it tests the willingness of the industrialized countries to step forward and offer such a regime. ■

ABOUT THE AUTHOR



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FURTHER INFORMATION

● **On the Web:** To experiment with the sensitivity of these results, relative to alternative parameterizations, see the online GDRs calculator at www.GreenhouseDevelopmentRights.org/Calculator.

ACKNOWLEDGEMENTS

● This article is based on material extracted from the report, *The Greenhouse Development Rights Framework*, published by the Heinrich Böll Foundation, Christian Aid, EcoEquity and the Stockholm Environment Institute and available at www.GreenhouseDevelopmentRights.org. The author acknowledges the contribution of the co-authors of that report, Paul Baer, Tom Athanasiou and Eric Kemp-Benedict.

CONFERENCES

World Sustainable Energy Days 2009

Wels, Austria:

25-02-2009 to 27-02-2009

One of the largest of European events focusing, each year, on energy-related issues. Will include the "European Pellet Conference" covering technology trends and innovations, markets in Europe and worldwide and promotion and marketing amongst other themes. All of the events will have simultaneous translation into English, Italian, Spanish and German.

Details: Christiane Egger, Conference Director, O.Oe. Energiesparverband, Landstrasse 45, A-4020 Linz, Austria. Fax: +43-732-772014383 Email: office@esv.or.at Web: www.esv.or.at

IUFRO International Forest Biosecurity Conference

Rotorua, New Zealand:

16-03-2009 to 20-03-2009

Conference will incorporate the 6th Annual Forest Vegetation Management Conference, a workshop on managing biosecurity threats to forests in a changing global environment and IUFRO working parties on silviculture, forest health and environment. Issues to be discussed include: how do we stop pests moving around the world?; can we manage vegetation without herbicides?; are diverse forests more resistant to pest impacts?; and, how are pests of the future defined?

Details: Brian Richardson, SCION,

Te Papa Tipu Innovation Park, Private Bag 3020, Rotorua, New Zealand.

Email:

brian.richardson@scionresearch.com Web: <http://forestbiosecurity.com>

EcoProcura 2009: Climate Neutral through Procurement

Reykjavik, Iceland:

25-03-2009 to 27-03-2009

The 7th EcoProcura conference intends to discuss how sustainable procurement can support climate change mitigation and adaptation strategies without compromising on social and economic aspects. Aims to provide a forum for exchange of ideas, experiences, concepts and opinions on how sustainable procurement can contribute to reducing greenhouse gas emissions and adaptation to climate change.

Details: ICLEI International Training Center, Leopoldring 3, D-79098 Freiburg, Germany.

Fax: +49-761-3689229

Email: ecoprocura2009@iclei.org

Web: www.iclei.org/ecoprocura2009

7th International Science Conference on the Human Dimensions of Global Environmental Change

Bonn, Germany:

26-04-2009 to 30-04-2009

Working theme of this open meeting is "Social Challenges of Global Change". Each of the four days will focus on a specific issue for debate, discussion and presentations. Issues covered include demographic chal-

lenges, establishing social cohesion, dealing with resource limitations, and adapting institutions so as to better address global change and its challenges.

Details: 2009 Conference Organizer, IHDP, UN Campus, Hermann-Ehlers-Str 10, 53113 Bonn, Germany.

Fax: +49-228-8150609

Email: openmeeting@ihdp.unu.edu

Web: www.openmeeting2009.org

2nd Climate Change Technology Conference 2009

Hamilton, Canada:

12-05-2009 to 15-05-2009

CCTC2009 is a Canadian/international forum for engineers, scientists, policy advisors, industry and other stakeholders to share and exchange new information and ideas for dealing with climate change and global warming.

Details: Eric Williams, c/o Canoe-About Inc., 16 Brookview Crescent, RR#2 Tiverton, Ontario N0G 2T0, Canada.

Fax: +1-519-3966926

Email: info@canoe-about.ca

Web: www.cctc2009.ca/en/index.html

Fourth International Conference on Sustainable Development & Planning

Cyprus:

13-05-2009 to 15-05-2009

Organized by the Wessex Institute of Technology and the University of Thessaly. Main focus of the conference is to address the issue of regional developments in integrated ways so as to be in accordance with

the principles of sustainability. Aimed at planners, environmentalists, ecologists, architects and others interested.

Details: Irene Moreno Millan, Sustainable Development 2009, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK. Fax: +44-238-0292853.

Email: imoreno@wessex.ac.uk

Web:

www2.wessex.ac.uk/09-conferences/sustainable-development-2009.html

4th International Symposium on Environment

Athens, Greece:

21-05-2009 to 24-05-2009

Intended to act as an annual forum for scholars, researchers and students in all disciplines pertaining to environmental issues. Aims to bring together a wide range of participants to discuss and network on latest research, studies and findings. Conference proceedings will be published in a special edition. Will also include the option of an archeological tour and a cruise in the Greek islands.

Details: Gregory Patanikos, Athens Institute for Education and Research, 8 Valaoritou Street, Kolonaki, 10671 Athens, Greece. Fax: +30-210-3634209

Email: gtp@atiner.gr

Web:

www.atiner.gr/docs/Environment.htm

ICLEI World Congress 2009

**Edmonton, Canada:
14-06-2009 to 18-06-2009**

Working theme for the congress is "Connecting Leaders - Advancing Local Action for Sustainability". Aims to facilitate exchange and promote capacity-building among local governments and other stakeholders who play leading roles in the path towards sustainability. Will include keynote presentations, reports, debates, workshops, networking events, site visits and an exhibition.

*Details: Conference Organizer, ICLEI International Training Centre, Leopoldring 3, 79098 Freiburg, Germany.
Fax: +49-761-3689229*

*Email: world.congress@iclei.org
Web: www.iclei.org/worldcongress*

2009 International Energy Workshop

**Venice, Italy:
17-06-2009 to 19-06-2009**

Organized with the International Center for Climate Governance and the Euro-Mediterranean Centre for Climate Change. The workshop will provide a venue for researchers, analysts and practitioners to network and compare energy projections and analyse the interrelationship between climate change and energy. Will include plenary sessions, key-note talks and other presentations.

Details: Angela Marigo, Fondazione Eni Enrico Mattei, Palazzo Querini Stampalia, Castello 5252, I-30122 Venice, Italy.

Fax: +39-41-2711461

Email: angela.marigo@feem.it

Web: www.iccgov.org/iew2009

**2009 ACEEE Summer Study on Energy Efficiency in Industry
New York, USA:**

28-07-2009 to 31-07-2009

Working theme of the 2009 study course is "Timing is Everything: Moving Investment Decisions to Energy-Efficient Solutions". Main panel areas of work will include: investing in energy-saving technologies; energy efficiency as a co-benefit; selling energy efficiency in your organization; energy efficiency: investing in a time of uncertainty; and regulatory aspects and incentives to energy-efficient investments.

Details: Rebecca Lunetta, ACEEE Summer Study Office, PO Box 7588, Newark, DE 19714-7588, USA.

Fax: +1-302-2923965

Email: rlunetta@verizon.net

Web: www.aceee.org

**SER International 2009 World Conference on Ecological Restoration
Perth, Australia:**

23-08-2009 to 27-08-2009

The 19th in a series of conferences organized by the Society for Ecological Restoration (SER).

Details: Society for Ecological Restoration International, 285 W 18th Street, Suite 1, Tucson, Arizona 85701, USA.

Fax: +1-270-6265485

Email: seri2009@bgpa.wa.gov.au

Web:

www.ser.org/events.asp?EventID=219

World Climate Conference-3 2009

**Geneva, Switzerland:
31-08-2009 to 04-09-2009**

Working theme of the conference is "Climate prediction for decision-making: focusing on seasonal to interannual time-scales, taking into account multi-decadal prediction". Dates provisional.

Details: WMO, Conference Organizer, Case Postale 2300, CH-1211 Geneva, Switzerland.

Fax: +41-22-7308181.

Email: info@wmo.ch

Web: www.wmo.ch/pages/world_climate_conference/index_en.html

8th International Workshop on Large-Scale Integration of Wind Power into Power Systems

Bremen, Germany:

14-10-2009-15-10-2009

Conference will include a workshop on Transmission Networks for Off-shore Wind Farms. A field trip to be taken the day after the workshops is also planned. Intended to provide a platform for exchanging knowledge, ideas and experiences regarding wind energy and in-depth discussions and brainstorming. Representatives from companies and research institutes will give presentations.

Details: Workshop Organizer, Energnautics GmbH, Muhlstrasse 51, 632225 Langen, Germany.

Email: info@energnautics.com

Web: www.windintegrationworkshop.org

XIII World Forestry Congress 2009

**Buenos Aires, Argentina:
18-10-2009 to 25-10-2009**

Co-organized by the Food and Agriculture Organization and held every six years. Congress's intent is to provide a forum whereby collective knowledge and experience can give guidance to the formulation and implementation of environmentally friendly forest policies. Views expressed in discussions can assist in research and in the identifying of future study areas together with the setting of universal standards and uniform classifications.

Details: 2009 World Forestry Congress Organizer, Paseo Colon 982, Anexo Jardin, C1063ACV Buenos Aires, Argentina.

Email: info@cfm2009.org

Web: www.wfc2009.org

15th Conference of the Parties to the UNFCCC & the 5th Meeting of the Parties to the Kyoto Protocol

Copenhagen, Denmark:

07-12-2009 to 18-12-2009

Overarching goal is to agree a post-Kyoto climate treaty framework.

Details: UNFCCC Secretariat COP15/

MOP5, PO Box 260124, D-53153 Bonn, Germany.

Fax: +49-228-8151999

Email: secretariat@unfccc.int

Web: www.unfccc.int/meetings/unfccc_calendar/items/2655.php?year=2009

Interview: Heleen de Coninck

Heleen de Coninck, a specialist in international climate policy and technology, discusses the allocation of national targets based on individual emissions

You've been working with institutions in Italy and the United States on a fairer way of allocating emissions targets between nations.

What's the problem with the current system, agreed in Kyoto some years ago?

In the Kyoto Protocol, emission allocation depends on a number of things, but particularly the average income of the countries. Countries with a high average income get targets; countries with low average incomes do not. The premise is that emissions depend on income. To some degree, this is true. But the approach is not perfect. By taking average emissions, it ignores the fact that, in low-income countries, there are millions of individuals who have very high emissions. These people are not faced with any climate policy, and essentially free-ride on the vast numbers of poor people in their countries. In India, for instance, there are 600 million peo-

ple who emit practically nothing at all, but also some 50 million (about the amount of people living in France) who have emissions on a par with the European average.

What are the main elements of your proposal that climate policy should be based on individual emissions?

It is essentially a calculation method for the national allocation of carbon dioxide emission allowances. We start from the premise that every individual should be treated the

MAIN POINTS

- **Heleen de Coninck describes a proposal for a fairer way of allocating emissions targets.**
- **National targets are based on individual emissions, with the affluent high-**

emitters, wherever they live, shouldering responsibility.

- **The scheme generates common but differentiated results, consistent with the climate treaty.**

same, regardless of which country they live in. We calculate the individual emissions by taking the income distributions of countries, and multiply them with the country-specific carbon intensity. Gathering all individuals in all countries together for, say, 2003, you can combine over six billion individuals, each with their individual emissions, in one curve. (See figure on the following page.)



Drax coal-fired power station, United Kingdom

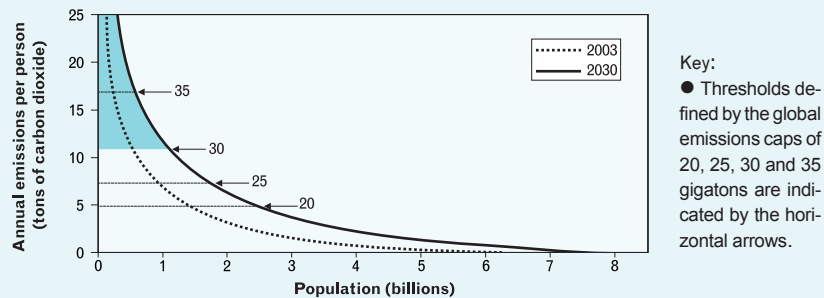
Photo: © Richard Clay/SEI

By making projections of income distribution and carbon intensity for the year 2030, and again adding up all the countries' individuals, you get the same curve, but, reflecting population growth, now with 8.1 billion data points, each representing a person with a certain carbon dioxide emission level based on their income and the carbon intensity of the country they live in. This curve would show a greater surface area than the curve for 2003, as emissions are projected to have risen by 2030.

If one would then set a global emission target for 2030, for example, 30 gigatons of carbon dioxide (GtCO₂) in total, and allocate that to the low emitters first and the high emitters last, you arrive at a global personal cap. A country's national cap depends on the number of individuals above the personal cap. So, if a country only has inhabitants who are below the cap, it gets no target and it can develop according to business as usual. If it has a small population that exceeds the cap, it gets a country-wide target that allows those below the cap to develop normally, but which caps those in the country with higher emissions than the personal cap. The result is a per-country allocation based on the number of individuals with high emissions.

Taking account of the distribution of income within a country distinguishes this scheme from more conventional approaches. But doesn't the

CUMULATIVE POPULATION RANKED BY ANNUAL CO₂ EMISSIONS



allocation of targets based on projections of income distribution and carbon intensity create a major source of uncertainty? At the least, wouldn't the targets need to be continually revised?

This is a question of how to implement the scheme in practice, if countries agree on the principle. Indeed, the targets may need updating, perhaps every five years or so. This would slightly change the target setting from year to year for countries, but the difference is not expected to be large. In general, there are many practical issues that need to be resolved. The data framework now is only about carbon dioxide, for example. Other greenhouse gases would ideally be incorporated, but the relation with income is less clear, so income distributions might not be the best approximation of individual emissions.

The major developing nations are resisting pressure to accept some control on emission growth. Would this scheme make it more likely countries such as China and India would take on a formal commitment?

In our view it might. The main reason India and (to a lesser degree) China state for their resistance of emission caps is that their first priority is to lift those hundreds of millions of poor people out of poverty, not to reduce emissions. But in this approach, their targets would be based only on those people that are not living in poverty – it is the more affluent people who appear higher on the income distributions and, hence, have higher emissions and these are the ones the country cap is based on. In addition, it provides the rich countries, which have many more high emitters, with more stringent targets than poorer countries.

Apart from that, it provides a framework that honours equity, the reason we feel this approach might help is because of the results it gives. For a 30 GtCO₂ global cap in the year 2030, around 1.2 billion people around the world are considered high emitters, and the countries where they live are thus faced with targets. Of these 1.2 billion, around 300 million live in the United States (it corresponds to about 85 per cent of the population), around 300 million live in China, around 300 million in the rest of the Organisation for Economic Co-operation and Development and 300 million live in the rest of the world, mainly in oil- and gas producing countries with high carbon intensities. Although the United States and China targets are comparable in terms of the number of people, the United States target is more stringent as its high emitters emit much more than the high emitters in China. In that sense, this approach generates common but differentiated results – which follows the United Nations Framework Convention on Climate Change to the letter.

How does this proposal link to poverty alleviation, a more immediate issue than climate change for many of the world's population?

In one version of our approach, we allow a poverty headroom for 2.7 billion people in 2030 who emit less than one ton of carbon dioxide (tCO₂) per person per year. If they are allowed to grow to one tCO₂ per person

a year, which would mean considerable alleviation of poverty, the global personal cap for the high emitters only decreases by 10 per cent or so. We argue very much that something like this is done so our approach is even more consistent with development goals.

In principle, the approach only caps those who have high emissions, and lets the low emitters, the poor of the world, develop according to business as usual. However, it is only an allocation scheme and does not prescribe national policies. The rich and high emitters are often in power in poor countries. It could well be that emission reductions required are eventually taken out on the poor – the approach does not control that part as this is a case of national sovereignty. This might also happen if China or India would accept a target based on *per capita* average emissions.

The approach, therefore, does not give guarantees for poverty alleviation; it is designed to be an emission allocation calculation method. However, it is consistent with poverty reduction objectives as it in principle does not deny any individual or country the right to develop. ■

ABOUT THE INTERVIEWEE



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FURTHER INFORMATION

● **On the Web:** Further details of the proposed scheme are available in a Powerpoint presentation at www.tinyurl.com/92ks5x.

ACKNOWLEDGEMENT

● Development of the scheme is a collaborative project between Princeton University and Harvard University in the United States, Fondazione Eni Enrico Mattei in Milan, Italy, and the Energy Research Centre of the Netherlands.

BANK CRISIS

Rajendra Pachauri, chair of the Intergovernmental Panel on Climate Change, has lashed out at governments for spending trillions of dollars on the banking crisis while neglecting funding for poverty alleviation and climate change.

"It defies any kind of logic, if you look at the type of money that the world has spent on these bailouts, 2.7 trillion [US] dollars is the estimate, and it's been done so quickly and without questioning," he said. Fifty billion dollars a year was the estimate for tackling the Millennium Development Goals on sickness and poverty, he noted. "But everyone scoffed at it. Nobody did a damn thing."

Read more:
www.tinyurl.com/9kqwb6

SUPPORT

China has called on the developed nations to commit one per cent of domestic product to assist poorer countries in cutting their greenhouse gas emissions.

The financial support, which would largely cover the transfer of green technology, could amount to more than US\$300 billion a year. Even such large funds "might not be enough," said Gao Guangsheng of the National Reform and Development Commission. He observed that the developed nations had not fulfilled "some of the promises they made in the past very well."

Read more:
www.tinyurl.com/9mtc2u

REFUGEES

"We do not want to leave the Maldives, but we also do not want to be climate refugees living in tents for decades," said Mohamed Nasheed, newly elected president of the Maldives.

He announced that a proportion of tourism revenues would be invested in buying a new homeland. "We can do nothing to stop climate change on our own and so we have to buy land elsewhere. It's an insurance policy for the worst possible outcome."

Read more:
www.tinyurl.com/9kzphf

WARMING

The Northern Hemisphere warmth of the most recent ten years is greater than at any time over the past 1300 years according to the latest estimate of long-term temperature trends derived from indirect climate data.

The evidence used includes information from marine and lake sediment cores, ice cores, coral cores and tree rings. "We looked at a much expanded database and our methods are more sophisticated than those used previously," said Michael Mann of Penn State University in the United States. The recent warmth is without precedent even over this longer period.

Read more:
www.tinyurl.com/7sea67

FORESTS

The United Nations has launched the Reduced Emissions from Deforestation and Forest Degradation Programme (UN-REDD), which could provide the foundation for a tradeable carbon credit system.

"Forests are worth more alive than dead... and their ecosystem services and benefits are worth billions if not trillions of dollars if only we capture these in economic models," commented Achim Steiner, head of the United Nations Environment Programme.

Read more:
www.tinyurl.com/9tbo4r

Mixed signals from Poland

COP14, POZNAN

The 14th Conference of the Parties to the United Nations Framework Convention on Climate Change and various related meetings took place in Poznan, Poland, December 1st-12th 2008. Tiempo editors Mick Kelly and Sarah Granich report.

NEWS

As the 2008 United Nations Climate Change Conference began, Yvo de Boer, head of the Secretariat of the United Nations Framework Convention on Climate Change, called on the industrialized nations “to show the world that they are willing to shift gear and take on the leadership role in emission reductions.” The challenge in Poznan, he said, would be to identify which proposals for ongoing action and a post-Kyoto agreement should be taken forward and to focus on ranges of emissions reduction targets for industrialized nations.

Political developments around the world resulted in mixed signals regarding future prospects. On the positive side, the election of Barack Obama as president was seen as presaging a much-needed shift in the nego-

tating position of the United States in coming months. Listing the “planet in peril” alongside two wars and the financial crisis in his acceptance speech, Obama has made climate change a priority. The long-term goal of his climate plan is to cut greenhouse gas emissions by 80 per cent by the year 2050, with a reduction to 1990 levels the target for 2020.

Delegates from India and China welcomed Obama’s mid-term emissions target, but said that it is not tough enough. “It’s more ambitious than President Bush but it is not enough to achieve the urgent, long-term goal of greenhouse gas reductions,” commented He Jiankun of Tsinghua University in China. “It’s not ambitious enough considering the Kyoto Protocol targets, but, given the eight-year Bush administration, it’s progress,” said Dinesh Patnaik of the Indian Foreign Ministry.

Obama has appointed Harvard physicist John Holdren as director of the White House Office of Science and Technology Policy. British government adviser David King described the appointment as superb, saying “Holdren is a top-rate scientist and his position on climate change is as clear as you could get. This

is a signal from Barack Obama that he means business when it comes to dealing with global warming.” Carol M Browner, former head of the Environmental Protection Agency, will be presidential assistant for energy and climate change and this too is seen as a sign of Obama’s commitment to action on the environment. “Time and time again, when the nation has set a new environmental standard, the naysayers have warned it will cost too much,” Browner commented. “But, once we have set those standards, American ingenuity and innovation have found a solution at a far lower cost than predicted,” she continued. Steven Chu, director of the Lawrence Berkeley National Laboratory and a long-term advocate of the development of technologies to cut greenhouse gas emissions, will head the Department of Energy.

On a less positive note, as the Poznan meeting came to an end, the European Union announced that it had agreed a plan to meet its “20-20-20” targets, reducing greenhouse gas emissions by 20 per cent and meeting 20 per cent of energy requirements from renewable sources by the year 2020. A series of compromises was necessary for agreement to



A view of the dais at the closure of COP 14

Photo: © Jan Golinski/UNFCCC

be reached, resulting in concern that the European Union's leadership role in the climate negotiations may be under threat. "This could have been one of the European Union's finest moments, but once again short-sighted national self-interest has been put ahead of the long-term safety of the planet," commented Friends of the Earth. Oxfam described that final package as "business-as-usual tied up in a green ribbon," saying that "European Union leaders bowed to business lobby pressure and faltered at an historic moment."

Concessions were granted, for example, with regard to the auctioning of carbon emissions permits to protect industries that "face particular challenges." Moreover, it had

been proposed that a certain percentage of the revenue from the auctioning of permits would be committed to green measures and adaptation efforts in the developing world but member states will now have complete control over how the revenue is spent.

According to one estimate, the deal will allow around 80 per cent of the European Union's emissions cuts to be made outside the economic group through the Kyoto Protocol mechanisms. "This is an impossible message to send to the third world. We're only going to make a fifth of the effort ourselves at home and get everyone else to do our work for us?" said Claude Turmes, Green member of the European Parliament.

The European Union has proposed a limit of two degrees Celsius global warming. At the Poznan meeting, small island states proposed that global warming be capped at no more than 1.5 degrees Celsius. "Two degrees is simply too high," said Leon Charles on behalf of the Association of Small Island States (AOSIS). "It is not a sector that needs to be adjusted - we are talking about the survival of countries," he continued. "We will be the canary in the coal mine. If we go, so will others," said Albert Binger, an adviser to the Caribbean Community Climate Change Centre. "It is incumbent on our fellow citizens of the planet to keep the canary from dying." AOSIS has also called for the issue of insurance and compensation to be included in any future climate agreement and it was agreed in Poznan that this proposal be carried forward to the next phase of the negotiations.

As the meeting progressed, conference participants made a clear commitment to shift into full negotiating mode next year in order to meet the end-2009 deadline for the development of the next stage of the international response to climate change. It was agreed that emissions control commitments of the industrialized countries under a post-2012 treaty regime should principally take the form of quantified emission limitation and reduction objectives, as at present. Although some had hoped that a long-term emissions reduction goal would be agreed in Poznan, this was not to be.

Work was completed on operationalizing the Adaptation Fund, which, as things stand, will be supported by a levy on the Clean Development Mechanism and voluntary contributions. It has been estimated that the Fund could be worth US\$300 million a year by 2012, though the United Nations considers that tens of billions of dollars a year could be needed by 2030 to respond to climate impacts on developing nations. There was no agreement in Poznan on increasing support for the Adaptation Fund by applying levies on joint implementation and emissions trading. “The elephant in the room is still where the money for adaptation is going to come from,” commented Barry Coates of Oxfam New Zealand. “We urgently needed a decision on increased future funding for adaptation, but we didn’t get there.”

The conference did endorse what will now be the Poznan Strategic Programme on Technology Transfer, through which the Global Environment Facility aims to leverage private investment in mitigation and adaptation technologies in developing countries. It also instructed the Board of the Clean Development Mechanism (CDM) to develop means of streamlining the CDM process in order to boost take-up in nations with fewer than ten projects, especially in the Least Developed Countries (LDCs), Small Island Developing States and Africa. Capacity strengthening was cited by the G77/China as a major issue in this regard. Implementation of projects identified by the National Adaptation Programmes

Reducing Emissions from Deforestation in Developing Countries (REDD)

Extended consultations focused on the presence of a semicolon in text recommending methodological guidance on “issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.” This text, present in early drafts, was drawn from paragraph 1(b)(iii) of the Bali Action Plan. India and others, seeking a more central role for conservation and other activities, sought removal of the semicolon, which would give these issues more prominence in the text. The final text included a comma in place of the semicolon, a move many interpreted as a small victory for the inclusion of conservation, sustainable management of forests and enhancement of forest carbon stocks in any possible future REDD mechanism.”
 From *Earth Negotiations Bulletin* (Volume 12, Number 395)

of Action was discussed and the LDC Expert Group will consider support needed to facilitate this process. The outstanding matter of a renewed mandate for the Consultative Group of Experts, created to improve national communications from non-Annex I Parties, was not resolved.

“Poznan is the place where the partnership between the developing and developed world to fight climate change has shifted

beyond rhetoric and turned into real action,” claimed Maciej Nowicki, Polish environment minister, as the 2008 United Nations Climate Change Conference ended. “Governments have sent a strong political signal that, despite the financial and economic crisis, significant funds can be mobilized for both mitigation and adaptation in developing countries,” said de Boer. “We now have a much clearer sense of where we need to go in designing an outcome which will spell out the commitments of developed countries, the financial support required and the institutions that will deliver that support as part of the Copenhagen outcome,” he continued.

Others were less optimistic. “In the face of the unbearable human tragedy that we in the developing countries see unfolding every day, this is nothing but callousness, strategizing and obfuscation,” said India’s delegate, Prodipto Ghosh.

The next negotiating meeting will take place in Bonn in March/April 2009.

● **Further information:** The Tiempo Climate Cyberlibrary hourly coverage of climate news at www.tiempocyperclimate.org/newswatch. For further discussion of recent climate negotiating meetings, visit Earth Negotiations Bulletin (ENB) at www.iisd.ca/process/climate_atm.htm. ENB provided daily coverage of the Poznan meeting, available at www.iisd.ca/climate/cop14/.

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The Climate Action Network

Developing countries have always been under-represented in the official climate change negotiations. This can be explained by a lack of resources, including the financial means to attend, but also a lack of knowledge of the process and the issues discussed, and a lack of capacity to organize themselves and to be acknowledged.

This state of under-representation was the same for both Southern non-government organizations (NGOs) and official negotiators when the Climate Action Network (CAN) was established in 1989. Sixty-three NGOs from 22 countries, under the guidance of Greenpeace International and Environmental Defense, decided to establish CAN as a network for NGOs who share a common concern for the problems of climate change.

Today, CAN claims to be the main speaker on behalf of environmental NGOs and increasingly also development NGOs in the in-

ternational climate change negotiations. For the least developed countries adaptation is inevitable and therefore emphasized as a priority by CAN's Southern members. However, this view is not reflected in CAN's agenda and in its activities in the negotiations. The network claims to speak on behalf of all its mem-

THE FINAL WORD

Astrid Westerlind Wigström tasks the Climate Action Network (CAN) with becoming more responsive to developing country interests at international negotiations

bers but there is an observable lack of responsiveness to the interests of Southern NGOs.

This problem traces back to structural and agency level barriers within CAN that complicate Southern inputs and, therefore, Southern demands. Barriers at the structural level include a lack of internal funding to invite Southern NGOs to negotiations, poor quality internal communication that often leads to ignorance of Southern demands, failure of coordination at and between negotiations, and finally the fact that time dedicated to regional node activities has particularly benefited Northern CAN nodes. At an agency level, unequal experience and

knowledge of the climate change process often puts Southern NGOs in the background at negotiations. A history of powerful and charismatic leadership and informal ties within the network also inhibits Southern involvement and the possibility for Southern NGOs to influence the agenda.

Many of these issues can be overcome in order to increase Southern representation. One suggestion would be to invest in internal capacity building, crucially strengthening the regional nodes. CAN must be self critical and aware of the deficiencies within its network. Awareness and criticism of one's own institutional assumptions is key towards ensuring a successful and sustainable future.



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